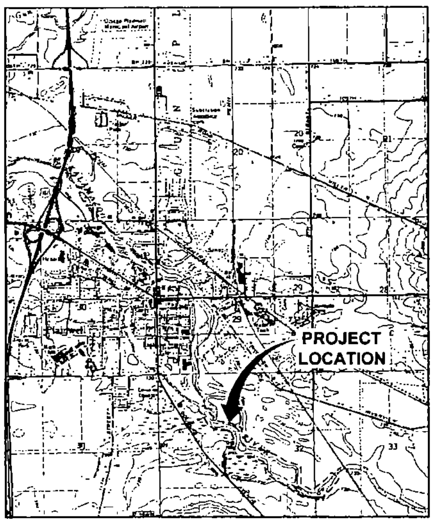
CONTRACT DRAWINGS

PLAINWELL NO. 2 DAM AREA TIME-CRITICAL REMOVAL ACTION FINAL DESIGN REPORT

ALLIED PAPER, INC./PORTAGE CREEK/ KALAMAZOO RIVER SUPERFUND SITE



REFERENCE: USGS QUADS., 7.5 MIN. SERIES, DRG TOPOGRAPHIC MAP ALLEGAN COUNTY, KALAMAZOO MICHIGAN.

LOCATION MAP

0 2000' 4000'
GRAPHIC SCALE

DATE ISSUED
JULY 2009

DATE REVISED
08/28/09

KALAMAZOO
RIVER STUDY GROUP

ARCADIS

ARCADIS U.S., INC

GENERAL

DRAWING NO.	REVISED	DESCRIPTION
G-1.1		INDEX OF DRAWINGS
G-1.2		PLAN VIEW INDEX
G-2.1		EXISTING SITE PLAN
G-3.1		ACCESS ROUTE AND DIRECTIONS TO C & C LANDFILL
G-3.2		ACCESS ROUTE AND DIRECTIONS TO OTTAWA COUNTY FARMS LANDFILL
G-4.1		PROPOSED WORK LIMITS
G-5.1		GENERAL NOTES AND SPECIFICATIONS
G-5.2		GENERAL NOTES AND SPECIFICATIONS

EROSION AND SEDIMENT CONTROL (E&SC) AND SITE PREPARATION

DRAWING NO.	REVISED	DESCRIPTION
ES-1.1		EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION PLAN
ES-2.1		EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION DETAILS

REMOVAL

DRAWING NO.	REVISED	DESCRIPTION
SR-1.1		REMOVAL PLAN (11+25 TO 21+75)
SR-1.2	8/28/09	REMOVAL PLAN (21+75 TO 32+25)
SR-1.3		REMOVAL PLAN (OXBOW)
SR-1.4	8/28/09	REMOVAL PLAN (32+25 TO 45+25)
SR-1.5		REMOVAL PLAN (45+25 TO 54+75)
SR-1.6		REMOVAL PLAN (54+75 TO 67+25)
SR-1.7		REMOVAL PLAN (67+25 TO 80+00)
SR-2.1		TYPICAL REMOVAL SECTIONS
SR-2.2		TYPICAL REMOVAL SECTIONS
SR-3.1		RESUSPENSION CONTROL SYSTEMS
SR-3.2		RESUSPENSION CONTROL SYSTEMS DETAILS
SR-4.1		PROPOSED TYPICAL TURBIDITY MONITORING LOCATIONS

MATERIAL STAGING/PROCESSING

DRAWING NO.	REVISED	DESCRIPTION
P-1.1		SEDIMENT DRAINAGE AND WATER TREATMENT PROCESS FLOW DIAGRAM
P-2.1		IMPACTED MATERIALS STAGING AND PROCESSING DETAILS
P-3.1		PROCESSING AREA – FACILITY DETAILS

BANK RESTORATION

DRAWING NO.	REVISED	DESCRIPTION
R-1.1		RESTORATION PLAN (11+25 TO 21+75)
R-1.2		RESTORATION PLAN (21+75 TO 32+25)
R-1.3		RESTORATION PLAN (OXBOW)
R-1.4		RESTORATION PLAN (32+25 TO 45+25)
R-1.5	8/28/09	RESTORATION PLAN (45+25 TO 54+75)
R-1.6		RESTORATION PLAN (54+75 TO 67+25)
R-1.7		RESTORATION PLAN (67+25 TO 80+00)
R-2.1	8/28/09	TYPICAL RESTORATION SECTIONS
R-2.2		TYPICAL RESTORATION SECTIONS
R-3.1		RESTORATION DETAILS

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING — USE TO VERIFY FIGURE REPRODUCTION SCALE

No	Date	Revisions	By	Ckd
1	08/28/09	MODIFIED DRAWING INDEX	AGS	TAS

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No: 6201046373
State: MICHIGAN | Date Signed: 08/12/09 | Project Mgr: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

INDEX OF DRAWINGS

GENERAL

ARCADIS Project No. B0064539.0000.00870
Date: JULY 2009
ARCADIS
30 W. MONROE ST. SUITE 1710
CHICAGO IL 60446-2404
TEL 312.332.4937

G-1.1

CITY: SYRACUSE DIV/GROUP: 141/ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYR: ON=*;OFF=*REF*
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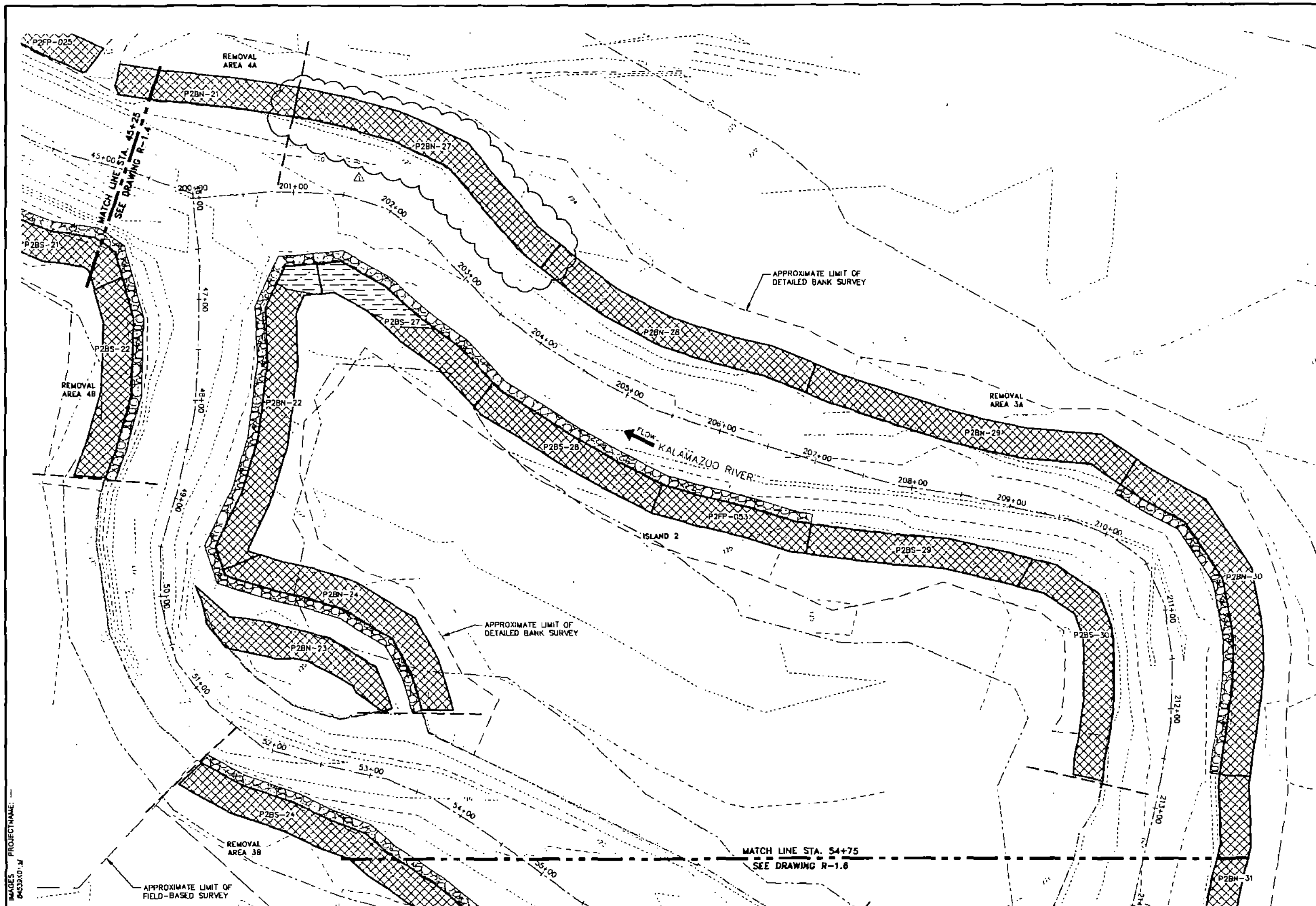
XREFS: 64539X00 IMAGES: PROJECTNAME:



WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
3A	FORESTED WETLAND	1.9	143	428
3B	FORESTED WETLAND	0.5	38	113
4A	FORESTED WETLAND	0.7	53	158
4B	FORESTED WETLAND	0.9	68	203
ISLAND 2	FORESTED WETLAND	2.5	188	563

@ 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2BN-31	TYPE A
P2BN-30	TYPE B
P2BN-29	TYPE A
P2BN-28	TYPE A
P2BN-27	TYPE A
P2BN-21	TYPE B
P2FP-025	TYPE C
P2BS-30	TYPE A
P2BS-29	TYPE A
P2FP-053	TYPE B
P2BS-28	TYPE B
P2BS-27	TYPE B
P2BN-24	TYPE B
P2BN-23	TYPE A
P2BN-22	TYPE D
P2BS-24	TYPE B
P2BS-22	TYPE B
P2BS-21	TYPE B

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS

LEGEND:

- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.

CITY: SYRACUSE DIV/GROUP: 141/ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYR:ON=*;OFF=*REF*
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ALEX
XREFS: 64539X00 64539X01 64539X02 IMAGES: 64539X01 PROJECTNAME:

1"=50' — 50' 0 50' 100'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No	Date	Revisions	By	Ckd
1	08/28/09	MODIFIED RESTORATION CELL P2BN-27 AND TABLE	AGS	TAS

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: 08/12/09 | Project Mgr: SDG
Designed by: ANE | Drawn by: AGS | Checked by: DA

STATE OF MICHIGAN — STEPHEN GARBACIAK JR. — ENGINEER — NO. 46373 — LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

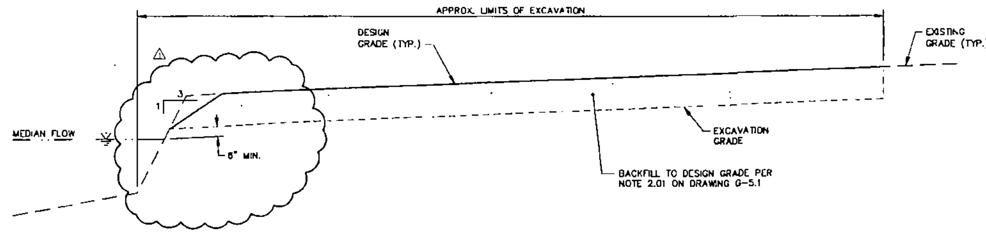
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION PLAN (45+25 TO 54+75)

BANK AND FLOODPLAIN RESTORATION

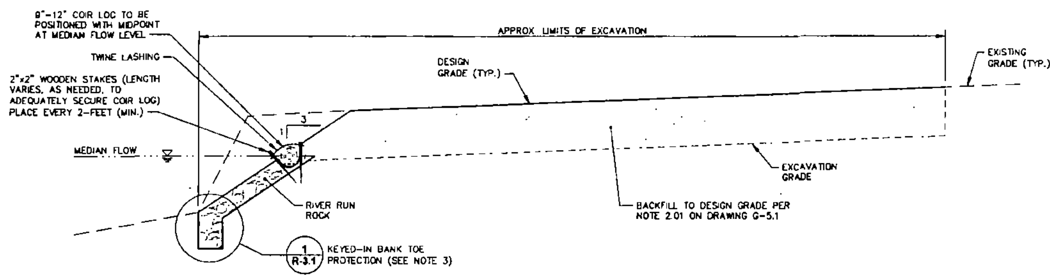
ARCADIS Project No. 80064539.0000.00670
Date: JULY 2009
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60446-2404
TEL. 312.332.4937

R-1.5



TYPICAL RESTORATION SECTION - TYPE A

NOT TO SCALE
(2X VERTICAL EXAGGERATION)



TYPICAL RESTORATION SECTION - TYPE B

NOT TO SCALE
(2X VERTICAL EXAGGERATION)

NOTES:

1. SEE DRAWINGS G-5.1 AND G-5.2 FOR RESTORATION MATERIALS AND PLANTING SPECIFICATIONS.
2. REFER TO RESTORATION DRAWINGS R-1.1 THROUGH R-1.7 FOR RESTORATION REQUIREMENTS.
3. KEYED-IN TOE MAY BE ELIMINATED AT LOCATIONS WHERE EXISTING RIVER BED CONSISTS OF DENSE SANDS, GRAVELS, AND/OR COBBLES. CONDITIONS TO BE EVALUATED IN FIELD AT TIME OF EXCAVATION.

CITY: SYRACUSE DIV/GROUP: 141/ENV DB AGS LD AGS PIC PM SDG TM LYR ON=*;OFF=*REF*
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XREFS 64539X00 IMAGES PROJECTNAME: --

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING — USE TO VERIFY FIGURE REPRODUCTION SCALE

No	Date	Revisions	By	Ckd
1	08/26/09	MODIFIED TYPICAL RESTORATION SECTION - TYPE A	AGS	TAS

Professional Engineer's Name		
STEPHEN GARBACIAK JR.		
Professional Engineers No: 6201040373		
State: MICHIGAN	Date Signed: 08/12/09	Project Mgr.: SDG
Designed by: DA	Drawn by: AGS	Checked by: DA

ARCADIS
ARCADIS U.S., INC

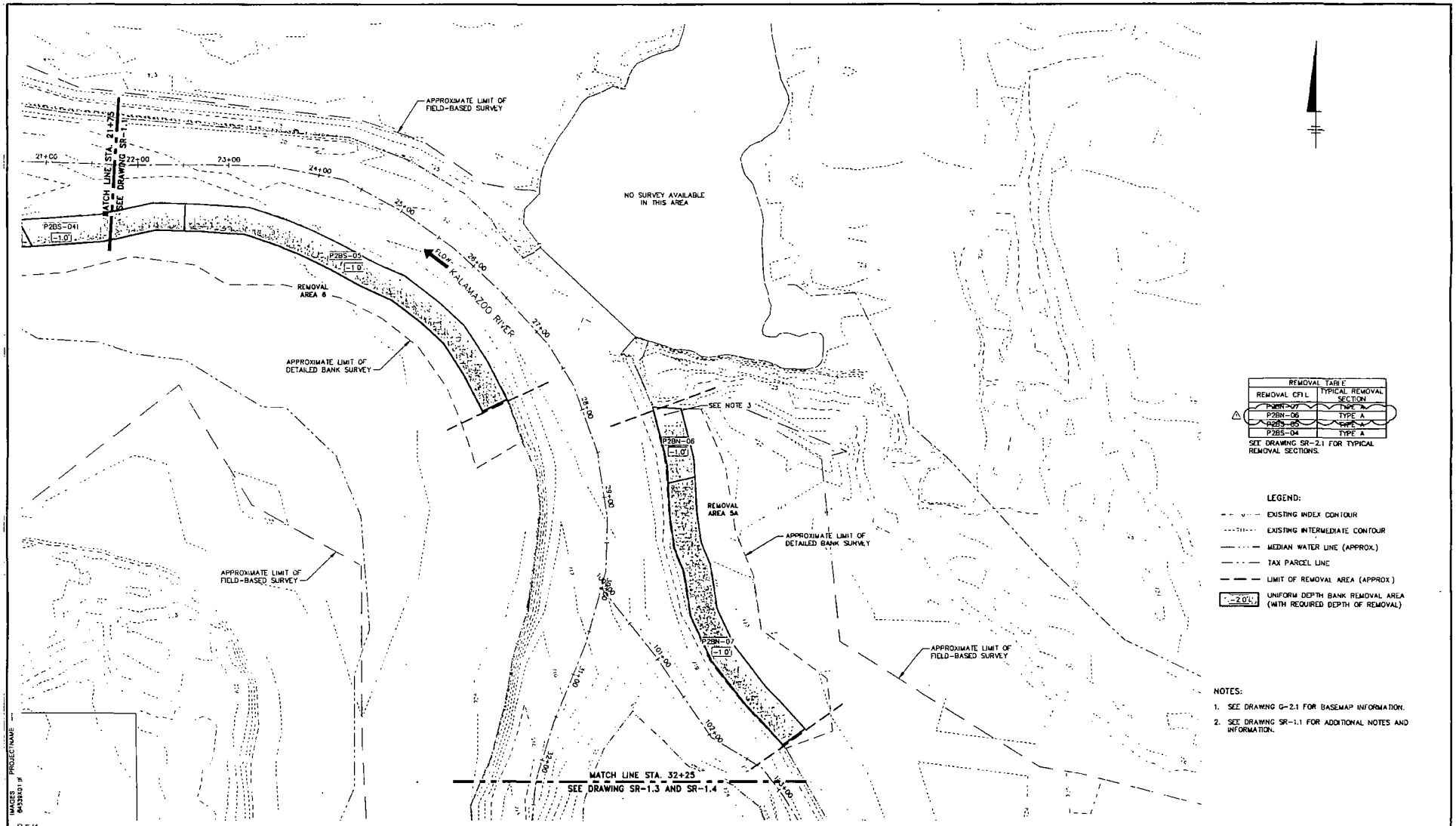
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

TYPICAL RESTORATION SECTIONS

BANK RESTORATION

ARCADIS Project No. B0064539.0000.00670
Date: JULY 2009
ARCADIS
30 W. MONROE ST
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

R-2.1



REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
~~P2BN-05~~	~~TYPE A~~
P2BN-06	TYPE A
~~P2BS-05~~	~~TYPE A~~
P2BS-04	TYPE A

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

LEGEND:

- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0': UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

XREFS: IMAGES
PROJECTNAME:

50' 0 50' 100'
1"=50'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE.

No	Date	Revisions	By	Chd
1	08/28/09	WOOTTEN REMOVAL TABLE	ACS	TAS

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr
MICHIGAN	08/12/09	SDG
Designed by: DA	Drawn by: ACS	Checked by: DA

STATE OF MICHIGAN — STEPHEN GARBACIAK JR. — ENGINEER — PROFESSIONAL ENGINEER

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP ▪ ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

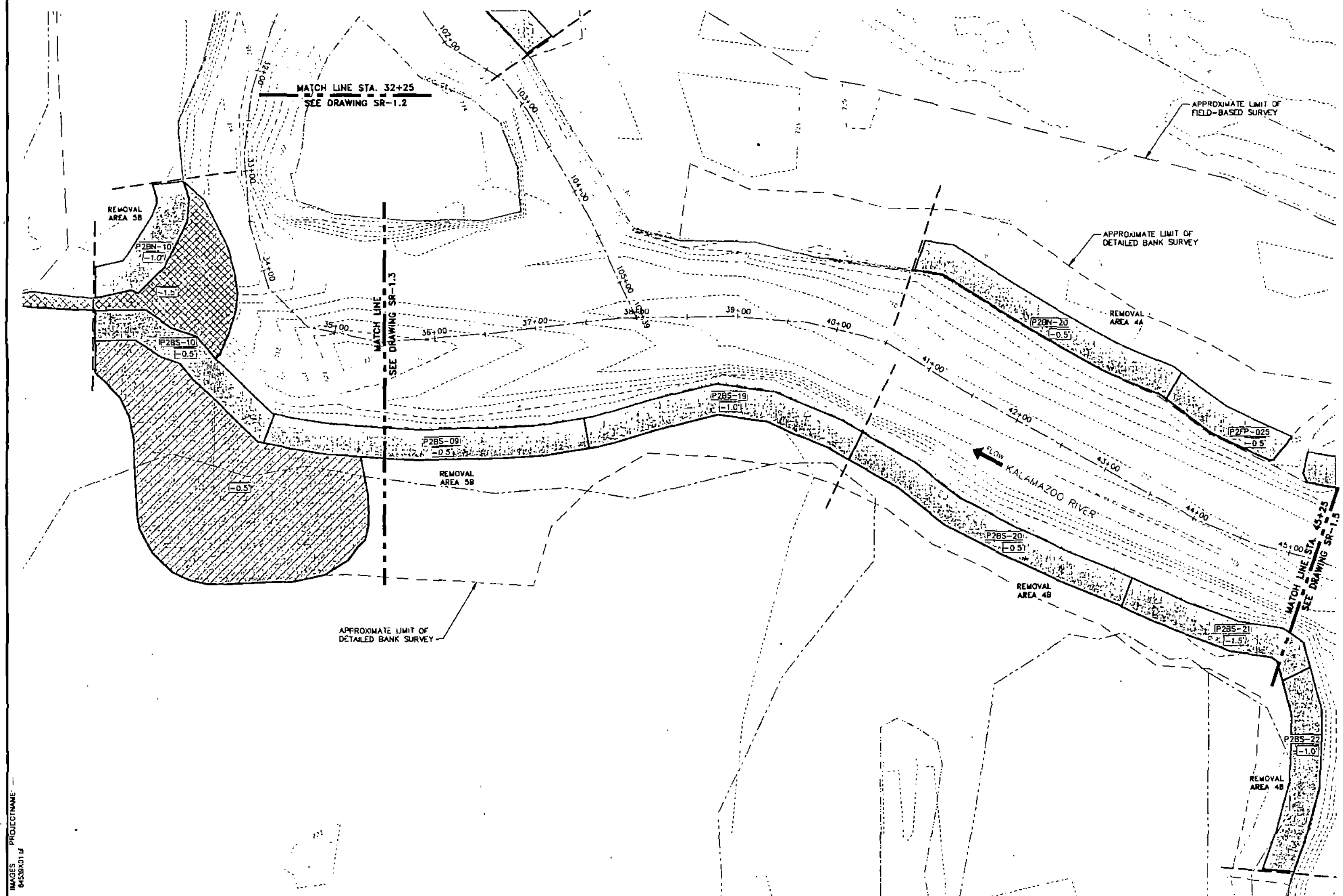
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (21+75 TO 32+25)

GENERAL

ARCADIS Project No.: B0064533.0000.00670
Date: JULY 2009
ARCADIS: 30 W. MONROE ST. SUITE 1710, CHICAGO, IL 60603-2404, TEL: 312 332 4937

SR-1.2



REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2FP-025	TYPE B
P2BN-20	TYPE A
P2BS-22	TYPE A
P2BS-21	TYPE A
P2BS-20	TYPE B
P2BS-19	TYPE A
P2BS-09	TYPE A*
P2BS-10	TYPE A*
P2BN-10	TYPE A*

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

* PORTIONS OF REMOVAL CELL INCLUDE ADDITIONAL FLOODPLAIN SOIL REMOVAL AND/OR SEDIMENT REMOVAL.

LEGEND:

- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)
- -1.5' UNIFORM DEPTH SEDIMENT REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)
- -0.5' UNIFORM DEPTH FLOODPLAIN REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

XREFS: 64539X00, 64539X01, 64539X02 IMAGES: 64539X01 PROJECTNAME: ----

1"=50' — 50' 0 50' 100'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING — USE TO VERIFY FIGURE REPRODUCTION SCALE

No	Date	Revision	By	Ckd
1	08/28/09	MODIFIED REMOVAL TABLE	AGS	TAS

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No: 6201046373
State: MICHIGAN | Date Signed: 08/12/09 | Project Mgr: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

STATE OF MICHIGAN — STEPHEN GARBACIAK JR. ENGINEER — LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (32+25 TO 45+25)

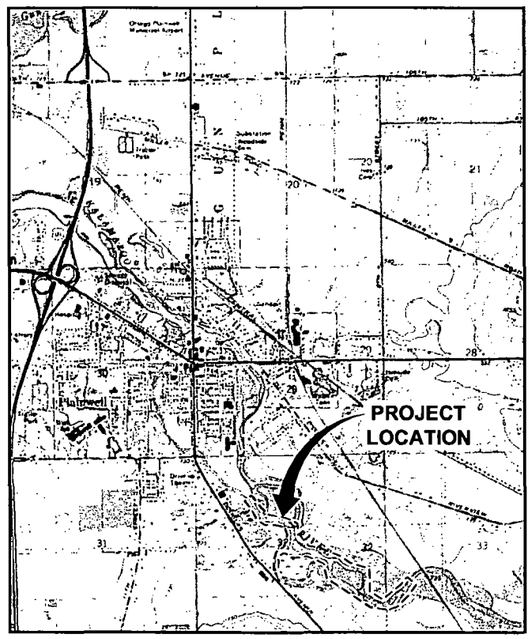
REMOVAL

ARCADIS Project No. B0064539.0000.00670
Date: JULY 2009
ARCADIS, 30 W. MONROE ST., SUITE 1710, CHICAGO, IL 60448-2404, TEL. 312.332.4937

SR-1.4

CONTRACT DRAWINGS

PLAINWELL NO. 2 DAM AREA TIME-CRITICAL REMOVAL ACTION FINAL DESIGN REPORT



REFERENCE: USGS QUADS., 7.5 MIN. SERIES, DRG TOPOGRAPHIC MAP
ALLEGAN COUNTY, KALAMAZOO MICHIGAN.

LOCATION MAP
0 2000' 4000'
GRAPHIC SCALE

ALLIED PAPER, INC./PORTAGE CREEK/ KALAMAZOO RIVER SUPERFUND SITE

DATE ISSUED / DATE REVISED
JULY 2009

KALAMAZOO RIVER STUDY GROUP

ARCADIS

ARCADIS U.S., INC.

GENERAL

DRAWING NO.	DESCRIPTION
G–1.1	INDEX OF DRAWINGS
G–1.2	PLAN VIEW INDEX
G–2.1	EXISTING SITE PLAN
G–3.1	ACCESS ROUTE AND DIRECTIONS TO C & C LANDFILL
G–3.2	ACCESS ROUTE AND DIRECTIONS TO OTTAWA COUNTY FARMS LANDFILL
G–4.1	PROPOSED WORK LIMITS
G–5.1	GENERAL NOTES AND SPECIFICATIONS
G–5.2	GENERAL NOTES AND SPECIFICATIONS

EROSION AND SEDIMENT CONTROL (E&SC) AND SITE PREPARATION

DRAWING NO.	DESCRIPTION
ES–1.1	EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION PLAN
ES–2.1	EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION DETAILS

REMOVAL

DRAWING NO.	DESCRIPTION
SR–1.1	REMOVAL PLAN (11+25 TO 21+75)
SR–1.2	REMOVAL PLAN (21+75 TO 32+25)
SR–1.3	REMOVAL PLAN (OXBOW)
SR–1.4	REMOVAL PLAN (32+25 TO 45+25)
SR–1.5	REMOVAL PLAN (45+25 TO 54+75)
SR–1.6	REMOVAL PLAN (54+75 TO 67+25)
SR–1.7	REMOVAL PLAN (67+25 TO 80+00)
SR–2.1	TYPICAL REMOVAL SECTIONS
SR–2.2	TYPICAL REMOVAL SECTIONS
SR–3.1	RESUSPENSION CONTROL SYSTEMS
SR–3.2	RESUSPENSION CONTROL SYSTEMS DETAILS
SR–4.1	PROPOSED TYPICAL TURBIDITY MONITORING LOCATIONS

MATERIAL STAGING/PROCESSING

DRAWING NO.	DESCRIPTION
P–1.1	SEDIMENT DRAINAGE AND WATER TREATMENT PROCESS FLOW DIAGRAM
P–2.1	IMPACTED MATERIALS STAGING AND PROCESSING DETAILS
P–3.1	PROCESSING AREA – FACILITY DETAILS

BANK RESTORATION

DRAWING NO.	DESCRIPTION
R–1.1	RESTORATION PLAN (11+25 TO 21+75)
R–1.2	RESTORATION PLAN (21+75 TO 32+25)
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R–1.6	RESTORATION PLAN (54+75 TO 67+25)
R–1.7	RESTORATION PLAN (67+25 TO 80+00)
R–2.1	TYPICAL RESTORATION SECTIONS
R–2.2	TYPICAL RESTORATION SECTIONS
R–3.1	RESTORATION DETAILS

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Chd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

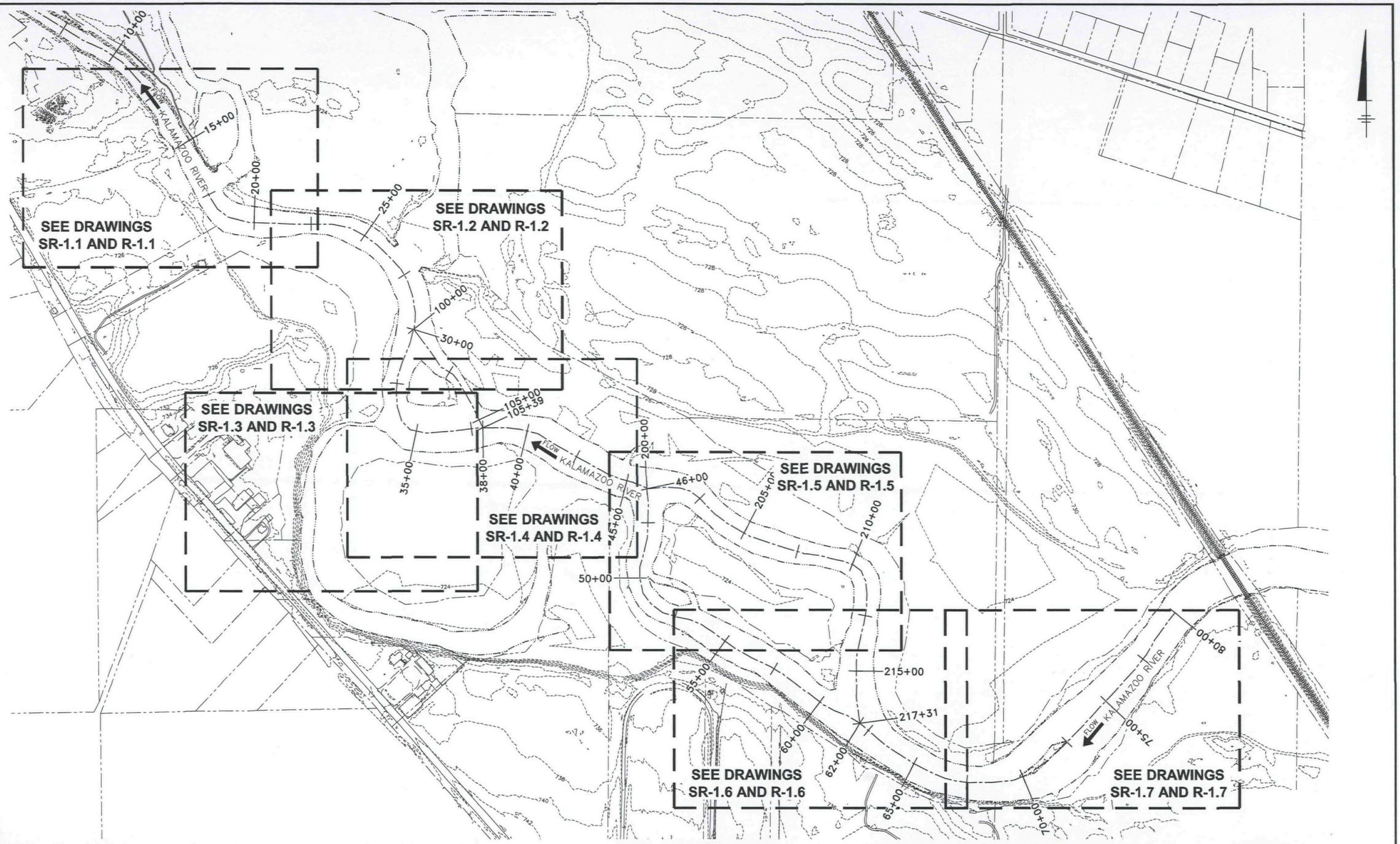
INDEX OF DRAWINGS

GENERAL

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

G-1.1



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XREFS: IMAGES: PROJECTNAME: ---
B0064539000
B0064539001
B0064539G02-C3D

200' 0 200' 400'
1"=200'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name
STEPHEN GARBACIAK JR.
Professional Engineer's No.
6201046373
State: MICHIGAN | Date Signed | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS
ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

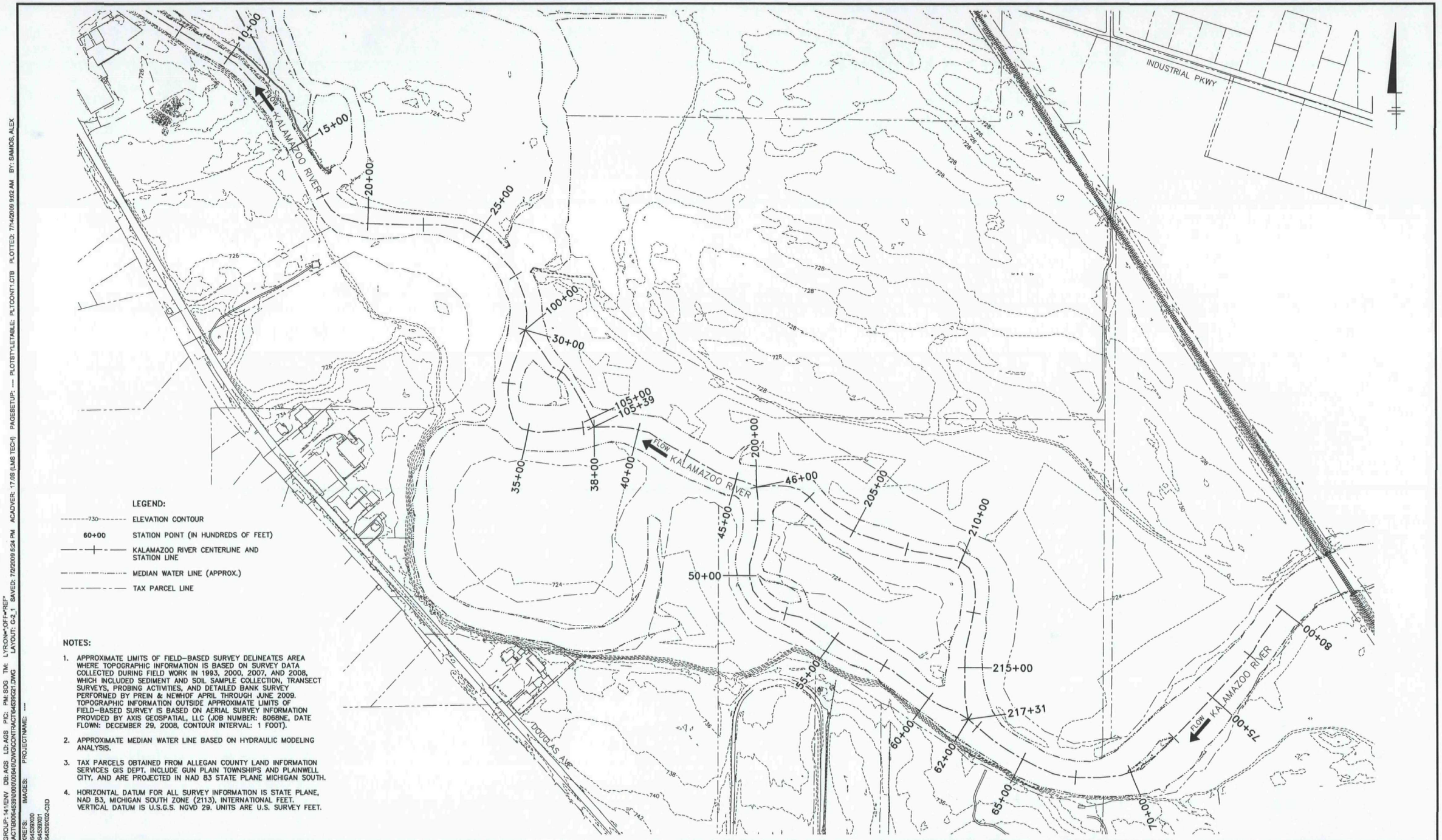
PLAN VIEW INDEX

GENERAL

ARCADIS Project No.
B0064539.0000.00670
Date
JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

G-1.2



LEGEND:

- 730 — ELEVATION CONTOUR
- 60+00 — STATION POINT (IN HUNDREDS OF FEET)
- KALAMAZOO RIVER CENTERLINE AND STATION LINE
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE

NOTES:

1. APPROXIMATE LIMITS OF FIELD-BASED SURVEY DELINEATES AREA WHERE TOPOGRAPHIC INFORMATION IS BASED ON SURVEY DATA COLLECTED DURING FIELD WORK IN 1993, 2000, 2007, AND 2008, WHICH INCLUDED SEDIMENT AND SOIL SAMPLE COLLECTION, TRANSECT SURVEYS, PROBING ACTIVITIES, AND DETAILED BANK SURVEY PERFORMED BY PREIN & NEWHOF APRIL THROUGH JUNE 2009. TOPOGRAPHIC INFORMATION OUTSIDE APPROXIMATE LIMITS OF FIELD-BASED SURVEY IS BASED ON AERIAL SURVEY INFORMATION PROVIDED BY AXIS GEOSPATIAL, LLC (JOB NUMBER: 8068NE, DATE FLOWN: DECEMBER 29, 2008, CONTOUR INTERVAL: 1 FOOT).
2. APPROXIMATE MEDIAN WATER LINE BASED ON HYDRAULIC MODELING ANALYSIS.
3. TAX PARCELS OBTAINED FROM ALLEGAN COUNTY LAND INFORMATION SERVICES GIS DEPT. INCLUDE GUN PLAIN TOWNSHIPS AND PLAINWELL CITY, AND ARE PROJECTED IN NAD 83 STATE PLANE MICHIGAN SOUTH.
4. HORIZONTAL DATUM FOR ALL SURVEY INFORMATION IS STATE PLANE, NAD 83, MICHIGAN SOUTH ZONE (2113), INTERNATIONAL FEET. VERTICAL DATUM IS U.S.G.S. NGVD 29. UNITS ARE U.S. SURVEY FEET.

CITY:: SYRACUSE DIVGROUP: 141/ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYRON=*OFF=*REF*
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XREFS: 64539X00 64539X01 64539X02-C3D IMAGES: PROJECTNAME: ---

200' 0 200' 400'
1"=200'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS
ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

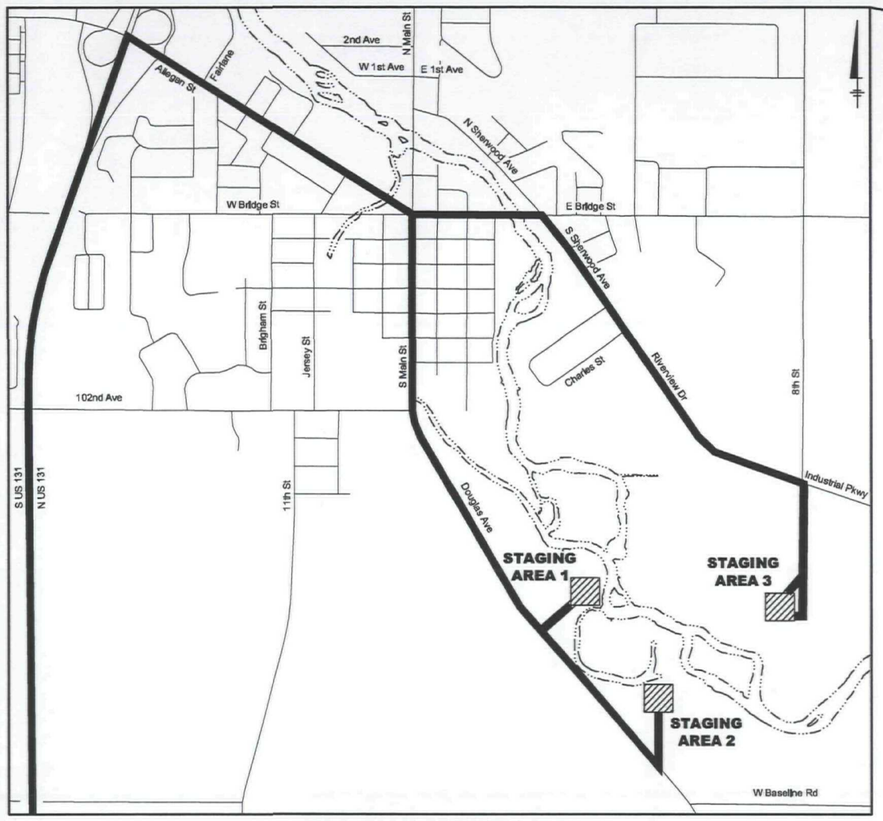
EXISTING SITE PLAN

GENERAL

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

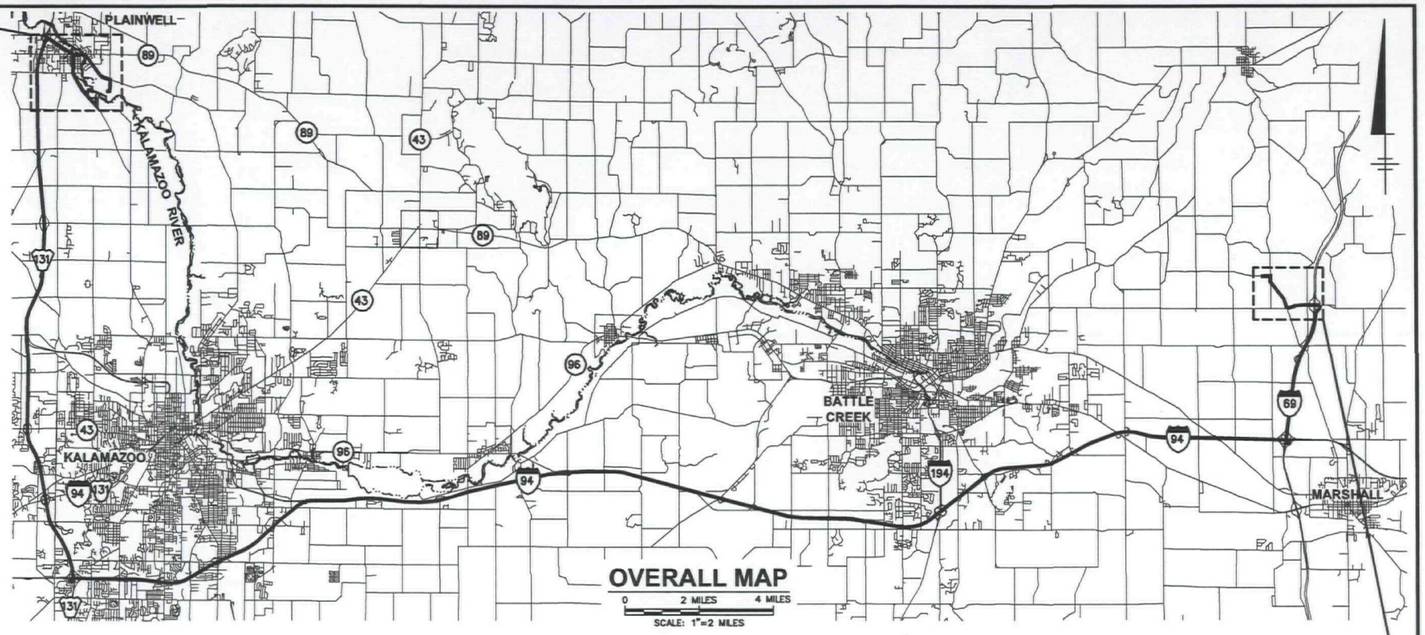
G-2.1



INSET MAP (RIVER AREA)

0 1000' 2000'

SCALE: 1"=1000'



OVERALL MAP

0 2 MILES 4 MILES

SCALE: 1"=2 MILES

LEGEND:

- STAGING AREA
- PRIMARY TRUCK ROUTE

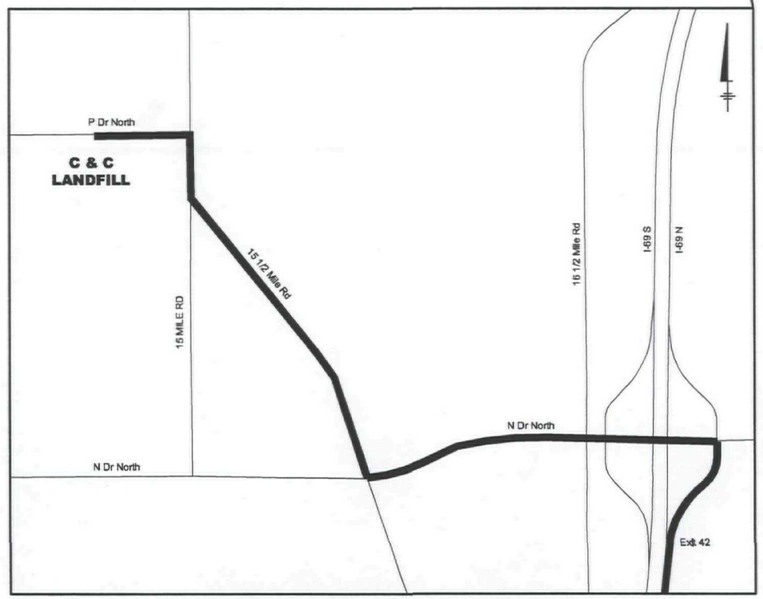
NOTES:

1. TAX PARCELS OBTAINED FROM ALLEGAN COUNTY LAND INFORMATION SERVICES GIS DEPT. INCLUDE OTSEGO AND GUN PLAIN TOWNSHIPS AND PLAINWELL CITY, AND ARE PROJECTED IN NAD 83 STATE PLANE MICHIGAN SOUTH.
2. ALLEGAN AND KALAMAZOO COUNTY MAPPING OBTAINED FROM MICHIGAN RESOURCE INFORMATION SYSTEM.

DIRECTIONS TO/FROM STAGING AREA 1 AND C & C LANDFILL	
TO:	
Turn right at P Dr. North	0.1 mi
Turn right at 15 Mile Rd	0.2 mi
Slight left at 15 1/2 Mile Rd	0.9 mi
Turn left at N Dr. North	0.9 mi
Merge onto I-69 South toward Ft. Wayne	3.3 mi
Merge onto I-94 West toward Kalamazoo	34 mi
Take exit 74B to merge onto US-131 North toward Grand Rapids	15 mi
Take exit 49A for M-89 E toward Plainwell	0.4 mi
Turn right at Allegan St/M-89	0.7 mi
Turn right at S Main St	0.5 mi
Continue on 10th St/Douglas Rd	0.6 mi
End at 10th St/Douglas Rd Entrance	
FROM:	
Turn right on 10th St/Douglas Rd toward 102nd Ave/Starr Rd	0.6 mi
Continue on S Main St	0.5 mi
Turn left at Allegan St/M-89	
Continue to follow M-89	1.0 mi
Merge onto US-131 South toward Kalamazoo	15 mi
Take exit 34A and merge onto for I-94 East toward Detroit	34 mi
Take exit 108 for I-69 North toward Lansing	3.3 mi
Take exit 42 for N Dr. North and turn left at N Dr. North	0.9 mi
Turn right at 15 1/2 Mile Rd	0.9 mi
Slight right at 15 Mile Rd	0.2 mi
Turn left at P Dr. North	0.1 mi
End C & C Landfill entrance	

DIRECTIONS TO/FROM STAGING AREA 2 AND C & C LANDFILL	
TO:	
Turn right at P Dr. North	0.1 mi
Turn right at 15 Mile Rd	0.2 mi
Slight left at 15 1/2 Mile Rd	0.9 mi
Turn left at N Dr. North	0.9 mi
Merge onto I-69 South toward Ft. Wayne	3.3 mi
Merge onto I-94 West toward Kalamazoo	34 mi
Take exit 74B to merge onto US-131 North toward Grand Rapids	15 mi
Take exit 49A for M-89 E toward Plainwell	0.4 mi
Turn right at Allegan St/M-89	0.7 mi
Turn right at S Main St	0.5 mi
Continue on 10th St/Douglas Rd	1.2 mi
End at 10th St/Douglas Rd Entrance	
FROM:	
Turn right on 10th St/Douglas Rd toward 102nd Ave/Starr Rd	1.2 mi
Continue on S Main St	0.5 mi
Turn left at Allegan St/M-89	
Continue to follow M-89	1.0 mi
Merge onto US-131 South toward Kalamazoo	15 mi
Take exit 34A and merge onto for I-94 East toward Detroit	34 mi
Take exit 108 for I-69 North toward Lansing	3.3 mi
Take exit 42 for N Dr. North and turn left at N Dr. North	0.9 mi
Turn right at 15 1/2 Mile Rd	0.9 mi
Slight right at 15 Mile Rd	0.2 mi
Turn left at P Dr. North	0.1 mi
End C & C Landfill entrance	

DIRECTIONS TO/FROM STAGING AREA 3 AND C & C LANDFILL	
TO:	
Turn right at P Dr. North	0.1 mi
Turn right at 15 Mile Rd	0.2 mi
Slight left at 15 1/2 Mile Rd	0.9 mi
Turn left at N Dr. North	0.9 mi
Merge onto I-69 South toward Ft. Wayne	3.3 mi
Merge onto I-94 West toward Kalamazoo	34 mi
Take exit 74B to merge onto US-131 North toward Grand Rapids	15 mi
Take exit 49A for M-89 E toward Plainwell	0.4 mi
Turn right at Allegan St/M-89	
Continue to follow M-89	1.1 mi
Turn right at S Sherwood Ave	0.3 mi
Continue on Riverview Rd/Riverview Dr	0.4 mi
End at Riverview Rd/Riverview Dr Entrance	
FROM:	
Turn left on Riverview Rd/Riverview Dr toward Charles St	0.4 mi
Continue on S Sherwood Ave	0.3 mi
Turn left at E Bridge St/M-89	
Continue to follow M-89	1.3 mi
Merge onto US-131 South toward Kalamazoo	15 mi
Take exit 34A and merge onto for I-94 East toward Detroit	34 mi
Take exit 108 for I-69 North toward Lansing	3.3 mi
Take exit 42 for N Dr. North and turn left at N Dr. North	0.9 mi
Turn right at 15 1/2 Mile Rd	0.9 mi
Slight right at 15 Mile Rd	0.2 mi
Turn left at P Dr. North	0.1 mi
End C & C Landfill entrance	



INSET MAP (C & C LANDFILL)

0 1000' 2000'

SCALE: 1"=1000'

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XREFS: 64539X00 64539X05 64539X07
IMAGES: PROJECTNAME: ----

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by	Drawn by	Checked by
DA	AGS	DA

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

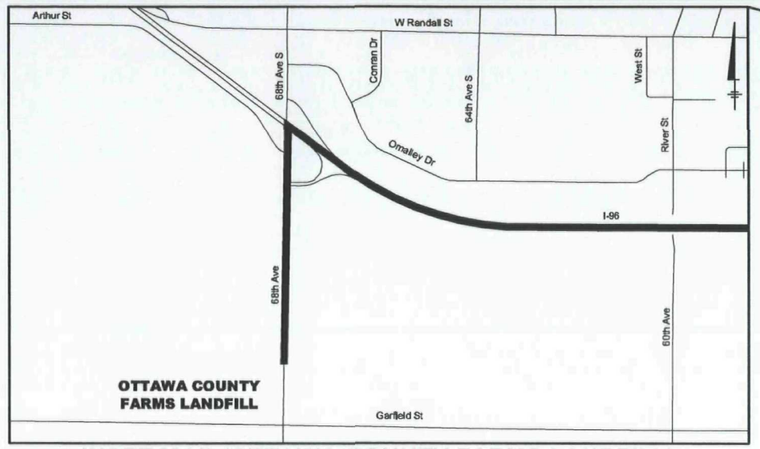
ACCESS ROUTE AND DIRECTIONS TO C & C LANDFILL

ARCADIS Project No.: B0064539.0000.00670

Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

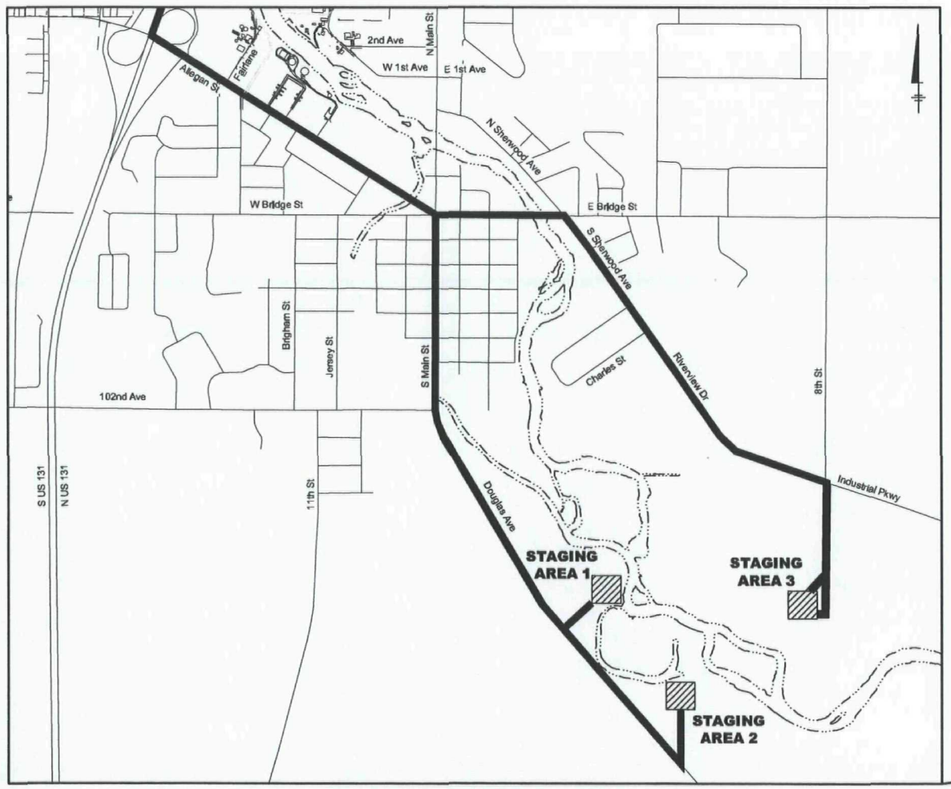
G-3.1



INSET MAP (OTTAWA COUNTY FARMS LANDFILL)

0 1000' 2000'

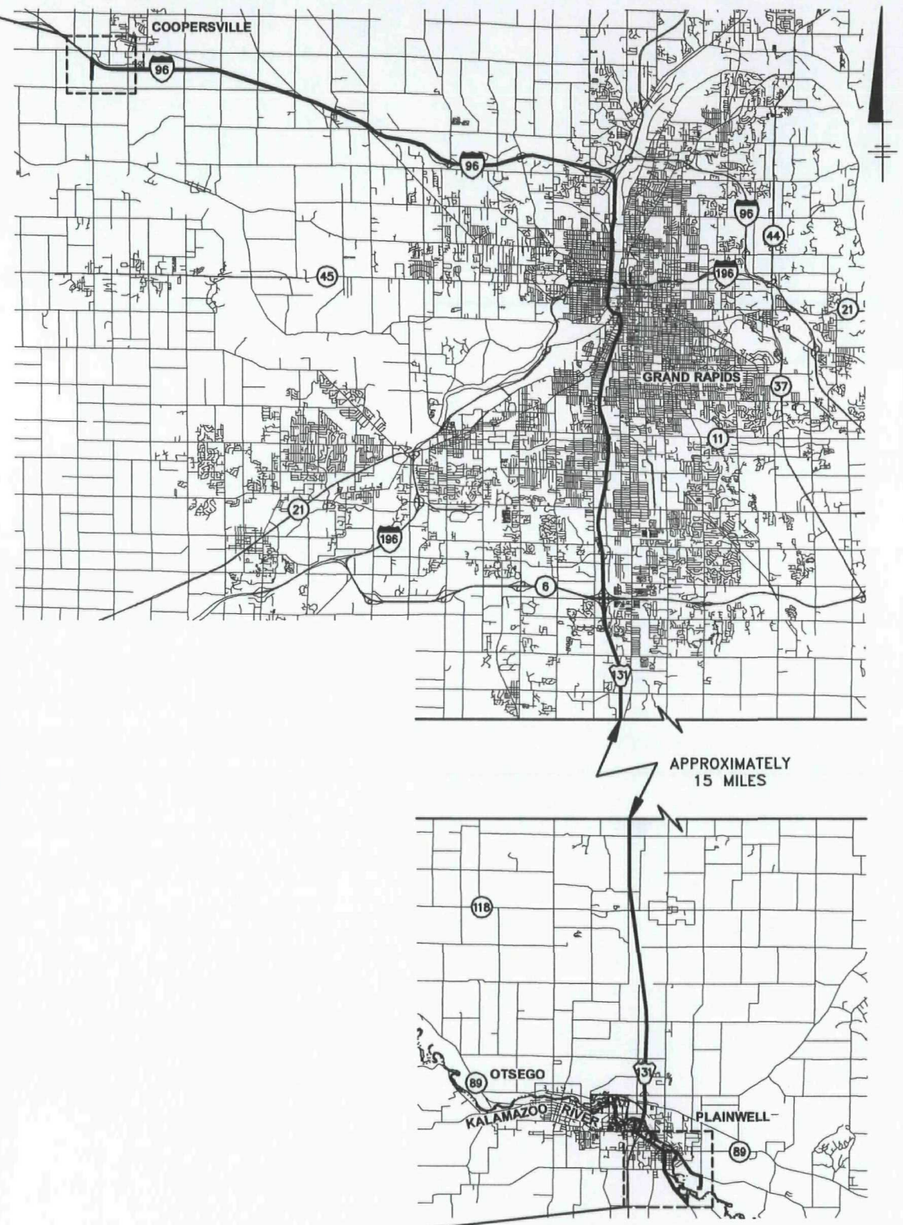
SCALE: 1"=1000'



INSET MAP (RIVER AREA)

0 1000' 2000'

SCALE: 1"=1000'



OVERALL MAP

0 2 MILES 4 MILES

SCALE: 1"=2 MILES

DIRECTIONS TO/FROM STAGING AREA 1 AND OTTAWA COUNTY FARMS LANDFILL	
TO:	
Head north on 68th Ave	0.4 mi
Turn right to merge onto I-96 E toward GD Rapids	14.3 mi
Take exit 31A to merge onto US-131 S toward Kalamazoo/Grand Rapids	38.9 mi
Take exit 49A for M-89 E toward Plainwell	0.4 mi
Turn left at Allegan St/M-89	0.7 mi
Turn right at S Main St	0.5 mi
Continue on 10th St/Douglas Rd	0.6 mi
End at 10th St/Douglas Rd Entrance	
FROM:	
Turn right on 10th St/Douglas Rd toward 102nd Ave/Starr Rd	0.6 mi
Continue on S Main St	0.5 mi
Turn left at Allegan St/M-89	
Continue to follow M-89	1.0 mi
Turn right to merge onto US-131 N toward Grand Rapids	38.5 mi
Take exit 89 on the left for M-37 N/I-96 W toward Muskegon	0.8 mi
Merge onto I-96 W	14.2 mi
Take exit 16 toward Eastmanville/Coopersville/CR-B35	0.2 mi
Turn left at 68th Ave	0.7 mi
End Ottawa County Farms Landfill entrance	

DIRECTIONS TO/FROM STAGING AREA 2 AND OTTAWA COUNTY FARMS LANDFILL	
TO:	
Head north on 68th Ave	0.4 mi
Turn right to merge onto I-96 E toward GD Rapids	14.3 mi
Take exit 31A to merge onto US-131 S toward Kalamazoo/Grand Rapids	38.9 mi
Take exit 49A for M-89 E toward Plainwell	0.4 mi
Turn left at Allegan St/M-89	0.7 mi
Turn right at S Main St	0.5 mi
Continue on 10th St/Douglas Rd	1.2 mi
End at 10th St/Douglas Rd Entrance	
FROM:	
Turn right on 10th St/Douglas Rd toward 102nd Ave/Starr Rd	1.2 mi
Continue on S Main St	0.5 mi
Turn left at Allegan St/M-89	
Continue to follow M-89	1.0 mi
Turn right to merge onto US-131 N toward Grand Rapids	38.5 mi
Take exit 89 on the left for M-37 N/I-96 W toward Muskegon	0.8 mi
Merge onto I-96 W	14.2 mi
Take exit 16 toward Eastmanville/Coopersville/CR-B35	0.2 mi
Turn left at 68th Ave	0.7 mi
End Ottawa County Farms Landfill entrance	

DIRECTIONS TO/FROM STAGING AREA 3 AND OTTAWA COUNTY FARMS LANDFILL	
TO:	
Head north on 68th Ave	0.4 mi
Turn right to merge onto I-96 E toward GD Rapids	14.3 mi
Take exit 31A to merge onto US-131 S toward Kalamazoo/Grand Rapids	38.9 mi
Take exit 49A for M-89 E toward Plainwell	0.4 mi
Turn left at Allegan St/M-89	
Continue to follow M-89	1.1 mi
Turn right at S Sherwood Ave	0.3 mi
Continue on Riverview Rd/Riverview Dr	0.4 mi
End at Riverview Rd/Riverview Dr Entrance	
FROM:	
Turn left on Riverview Rd/Riverview Dr toward Charles St	0.4 mi
Continue on S Sherwood Ave	0.3 mi
Turn left at E Bridge St/M-89	
Continue to follow M-89	1.3 mi
Turn right to merge onto US-131 N toward Grand Rapids	38.5 mi
Take exit 89 on the left for M-37 N/I-96 W toward Muskegon	0.8 mi
Merge onto I-96 W	14.2 mi
Take exit 16 toward Eastmanville/Coopersville/CR-B35	0.2 mi
Turn left at 68th Ave	0.7 mi
End Ottawa County Farms Landfill entrance	

LEGEND:

- STAGING AREA
- PRIMARY TRUCK ROUTE

NOTES:

1. TAX PARCELS OBTAINED FROM ALLEGAN COUNTY LAND INFORMATION SERVICES GIS DEPT. INCLUDE OTSEGO AND GUN PLAIN TOWNSHIPS AND PLAINWELL CITY, AND ARE PROJECTED IN NAD 83 STATE PLANE MICHIGAN SOUTH.
2. ALLEGAN AND KALAMAZOO COUNTY MAPPING OBTAINED FROM MICHIGAN RESOURCE INFORMATION SYSTEM.

XREFS: 645393X00 645393X05 645393X06 645393X07

IMAGES: PROJECTNAME: ---

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SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
STEPHEN GARBACIAK JR.		
Professional Engineer's No.		
6201046373		
State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by	Drawn by	Checked by
DA	AGS	DA

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

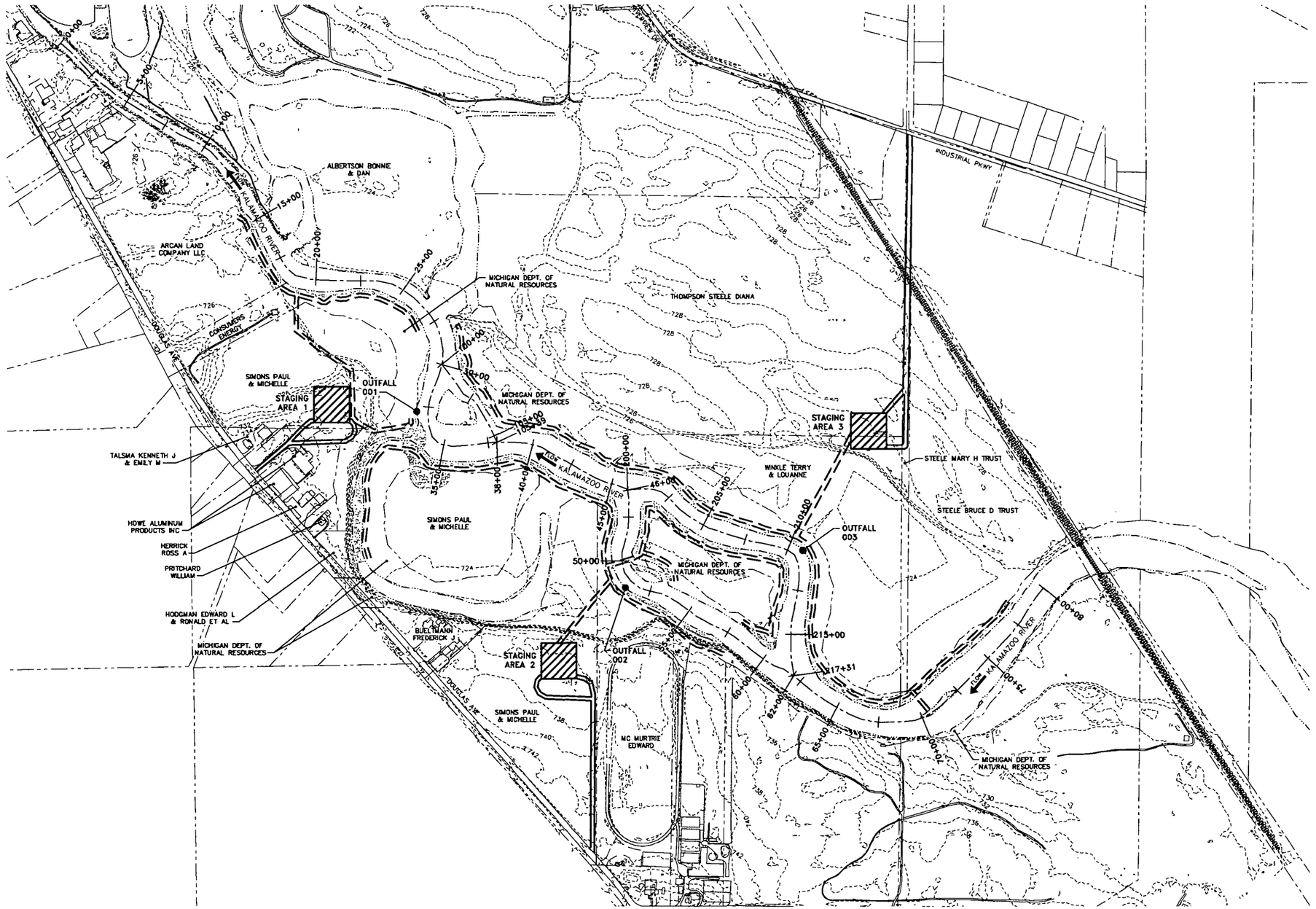
ACCESS ROUTE AND DIRECTIONS TO OTTAWA COUNTY FARMS LANDFILL

ARCADIS Project No.
B0064539.0000.00670

Date
JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

G-3.2



LEGEND:

- ELEVATION CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- 60+00 STATION POINT (IN HUNDREDS OF FEET)
- KALAMAZOD RIVER CENTERLINE AND STATION LINE
- TRUCK TRAFFIC – REMOVAL AREA TO/FROM STAGING AREA
- TRUCK TRAFFIC – REMOVAL AREA TO/FROM DISPOSAL AREA (SEE DRAWING G-3.1)
- STAGING AREA
- EXCAVATION AREA

NOTES:

1. SEE DRAWING G-3.1 FOR TRAFFIC ROUTES BETWEEN STAGING AREAS AND DISPOSAL AREA.
2. SEE DRAWINGS ES-1.1 AND ES-2.1 FOR ADDITIONAL STAGING AREA DETAILS.
3. THE LOCATIONS OF ACCESS ROADS AND STAGING AREAS DEPICTED ARE APPROXIMATE. ACTUAL LOCATIONS OF ACCESS ROADS AND STAGING AREAS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON FIELD CONDITIONS AND ACCESS AGREEMENT NEGOTIATION.
4. SEE DRAWING G-2.1 FOR ADDITIONAL BASE MAP INFORMATION.
5. TAX PARCELS OBTAINED FROM ALLEGAN COUNTY LAND INFORMATION SERVICES GIS DEPARTMENT AND INCLUDE GUN PLAIN TOWNSHIP AND PLAINWELL CITY AND ARE PROJECTED IN NAD 83 STATE PLANE MICHIGAN SOUTH.
6. EXISTING FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE PLANS, RECORDS AND SURVEYS, AND, THEREFORE, THEIR LOCATIONS, MATERIALS, AND TYPE OF USE MUST BE CONSIDERED APPROXIMATE ONLY. OTHER UNDERGROUND STRUCTURES AND UTILITIES MAY EXIST, THE LOCATIONS OF WHICH ARE PRESENTLY UNKNOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL STRUCTURES AND UTILITIES.

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64539X02.C3D

300' 0 300' 600'
1"=300'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
STEPHEN GARBACIAK JR.		
Professional Engineer's No.		
6201046373		
State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by	Drawn by	Checked by
DA	AGS	DA

ARCADIS

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KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

PROPOSED WORK LIMITS

GENERAL

ARCADIS Project No
B0064539.0000.00670

Date
JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

G-4.1

VEGETATION RESTORATION:

PART 1 – GENERAL

1.01 SUBMITTALS

A. CERTIFICATES: SUBMIT CERTIFICATES FROM SEED VENDORS FOR EACH SEED MIXTURE OR TYPE OF SEED REQUIRED. THE CERTIFICATES SHALL INCLUDE THE FOLLOWING: THE BOTANICAL NAME AND COMMON NAME, PERCENTAGE OF SEEDS BY WEIGHT IN A MIXTURE, PURITY OF THE SEED, GERMINATION PERCENTAGE, THE AMOUNT OF UNDESIRABLE PLANT SEEDS PRESENT IN THE MIXTURE, DATE OF PRODUCTION, DATE OF PACKAGING AND NAME AND ADDRESS OF SUPPLIER. SUBMIT AT LEAST 2 WEEKS PRIOR TO TIME OF PLANTING.

B. CERTIFICATES: SUBMIT CERTIFICATES FROM PLANT STOCK SUPPLIER FOR EACH GROUP OF PLANT STOCK REQUIRED, STATING BOTANICAL NAME, COMMON NAME, ORIGIN, AGE, DATE OF PACKAGING, AND NAME AND ADDRESS OF SUPPLIER. SUBMIT AT LEAST 2 WEEKS PRIOR TO PLANTING.

C. MAINTENANCE DATA: INCLUDE MAINTENANCE INSTRUCTIONS, APPLICATION FREQUENCY AND DOSAGE OF FERTILIZER, IF NECESSARY. METHODS TO CONTROL UNDESIRABLE PLANT SPECIES AND GRAZING BY HERBIVORES, SUCH AS CANADA GOOSE, WHITETAIL DEER, BEAVER, AND MUSKRAT, SHALL BE INCLUDED IN THIS SUBMITTAL.

D. TOPSOIL SUBMITTALS

1. DOCUMENTATION GIVING LOCATION OF PROPERTIES FROM WHICH THE TOPSOIL WILL BE OBTAINED, NAMES AND ADDRESSES OF THE OWNERS, AND DEPTH TO BE STRIPPED.

2. THE CONTRACTOR SHALL SUBMIT TEST RESULTS FOR PH, TEXTURE, AND ORGANIC CONTENT PERFORMED ON REPRESENTATIVE SAMPLES OF SOIL TO THE ENGINEER FOR REVIEW PRIOR TO MATERIAL USE. SAMPLES SHALL BE OBTAINED AT A FREQUENCY OF ONCE PER 10,000 CUBIC YARDS (CY). IF TOPSOIL IS OBTAINED FROM MORE THAN ONE SOURCE, EACH SOURCE SHALL BE SAMPLED AT A FREQUENCY OF ONCE PER 10,000 CY

3. THE CONTRACTOR SHALL SUBMIT RESULTS OF CHEMICAL ANALYSES TO THE ENGINEER FOR REVIEW PRIOR TO MATERIAL USE. SEPARATE CHEMICAL ANALYSES SHALL BE PERFORMED FOR EACH LOCATION IF MORE THAN ONE LOCATION IS UTILIZED AS A SOURCE OF TOPSOIL. THE MATERIAL MUST MEET THE REQUIREMENTS SPECIFIED IN PARAGRAPHS C AND D OF SECTION 2.01.

1.02 QUALIFICATIONS

A. SEED PRODUCER: OBTAIN SEED STOCK ONLY FROM ESTABLISHED VENDORS CAPABLE OF PROVIDING SEED QUANTITIES ADEQUATE TO COMPLETE THIS PROJECT. SEED VENDORS WILL BE REQUIRED TO PROVIDE THE DATA REQUESTED UNDER PARAGRAPH 1.01 A OF THIS SECTION PRIOR TO THE USE OF THAT SEED.

B. PLANTING STOCK SUPPLIER: OBTAIN PLANTING STOCK ONLY FROM ESTABLISHED VENDORS CAPABLE OF PROVIDING PLANT STOCKS IN QUANTITIES AND AT QUALITY LEVELS ADEQUATE TO COMPLETE THE PROJECT. PLANT VENDORS WILL BE REQUIRED TO PROVIDE THE DATA REQUESTED UNDER PARAGRAPH 1.01 B OF THIS SECTION PRIOR TO THE USE OF THAT STOCK.

C. INSTALLER: COMPANY SPECIALIZING IN WORK OF THIS SECTION WITH MINIMUM 5 YEARS EXPERIENCE IN PLANTING AND ESTABLISHING PLANT COMMUNITIES WITH DOCUMENTED REFERENCES. PERSONNEL USED TO PERFORM THE INSTALLATION OF PLANT MATERIALS SHALL ALSO HAVE OCCUPATIONAL EXPERIENCE IN HABITAT RESTORATION PROJECTS.

PART 2 – PRODUCTS AND PRODUCT HANDLING

2.01 TOPSOIL

A. THIS SPECIFICATION DEFINES THE REQUIREMENTS OF SOILS USED AS TOPSOIL IN AREAS OF HABITAT RESTORATION.

B. THE TOPSOIL SHALL BE NATURAL, FERTILE, FRIABLE, GRANULAR SOIL CHARACTERISTIC OF PRODUCTIVE SOILS IN THE REGION. TOPSOIL MUST BE UNIFORM IN COMPOSITION AND TEXTURE, CLEAN AND FREE FROM CLAY LUMPS. TOPSOIL MUST NOT HAVE ANY TOXIC OR SIMILAR SUBSTANCES, STONES GREATER THAN 2 INCHES IN DIAMETER, OR ANY WEEDS, STUMPS, ROOTS, AND DEBRIS 2 INCHES OR MORE IN GREATEST DIMENSION.

C. TOPSOIL SHALL CONSIST OF THE FOLLOWING GRADATION BY WEIGHT:

DESCRIPTION	PERCENT RETAINED
GRAVELS	0% TO 10%
SAND	20% TO 70%
SILT (0.074 MM TO 0.005 MM)	20% TO 50%
CLAY (<0.005 MM)	10% TO 30%

IF LOCAL SOURCE DOES NOT MEET ABOVE SPECIFICATION. TOPSOIL MAY BE APPROVED BY CONSTRUCTION QUALITY ASSURANCE MANAGER AS REQUIRED.

D. MATERIAL FROM THE BORROW SOURCE SHALL BE TESTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND FREQUENCIES:

PARAMETER	STANDARD	FREQUENCY	CRITERIA
GRAIN SIZE	ASTM D422–63 (2007)	1/10,000 CY	MONITOR CONSISTENCY OF BORROW SOURCE
PH	ASTM D2976–71 (2004)	1/10,000 CY	6 TO 8
ORGANIC CONTENT	ASTM D2974–07a	1/10,000 CY	1% TO 5%

(SEE ADDITIONAL INFORMATION IN SECTION 5 OF THE DESIGN REPORT.)

2.02 SEED MIXTURES

A. THE LIST OF PLANT SPECIES INCLUDED IN THE SEED MIXES TO BE APPLIED TO THE AREAS OF RESTORATION ARE PRESENTED ON DRAWING G–5.2.

B. SEED MIXTURES SHALL BE BLENDED BY THE VENDOR AND THE RATIOS OF THE VARIOUS SPECIES SPECIFIED ON DRAWING G–5.2 SHALL BE GUARANTEED BY THE VENDOR.

C. SEED MIXTURES SHOULD BE DELIVERED IN ORIGINAL SEALED CONTAINERS. SEEDS IN DAMAGED PACKAGING ARE NOT ACCEPTABLE. CONTAINERS SHOULD BE LABELED WITH THE FOLLOWING INFORMATION:

1. ANALYSIS OF SEED MIXTURE.
2. PERCENTAGE OF PURE SEED.
3. YEAR OF PRODUCTION.
4. NET WEIGHT.
5. DATE WHEN TAGGED AND LOCATION.
6. NAME AND ADDRESS OF DISTRIBUTOR.

D. SEEDS SHALL BE STORED IN WEATHERPROOF AND RODENT–PROOF ENCLOSURES.

E. ALL SEEDS SHALL HAVE THE PROPER STRATIFICATION AND/OR SCARIFICATION TO BREAK SEED DORMANCY FOR OTHER THAN FALL PLANTING.

2.03 PLANT STOCK

A. THE SHRUB AND SAPLING SPECIES, PLANT TYPES, SIZES, AND PLANTING DENSITIES FOR USE IN HABITAT RESTORATION ARE PRESENTED ON DRAWING G–5.2.

B. PLANTS SHALL BE TRUE TO THEIR NAME AS SPECIFIED.

C. PLANTS SHALL BE FREE OF INSECTS AND DISEASES AND SHALL SHOW THE APPEARANCE OF HEALTHY GROWTH AND VIGOR. ROOT STOCKS SHALL DISPLAY EVIDENCE OF NEW GROWTH PRIOR TO PLANTING.

D. ALL PLANT MATERIALS, INCLUDING COLLECTED STOCK, SHALL COMPLY WITH STATE AND FEDERAL LAWS WITH RESPECT TO INSPECTION FOR PLANT DISEASES AND INSECT INFESTATIONS. COLLECTED PLANT MATERIALS SHALL BE OBTAINED IN STRICT COMPLIANCE WITH ANY APPLICABLE WETLAND OR SPECIES PROTECTION PROGRAMS.

E. EACH SPECIES SHALL BE HANDLED AND PLACED IN A MANNER THAT IS CONSISTENT WITH GOOD TRADE PRACTICE TO VERIFY THE ARRIVAL OF THE PLANTS AT THE SITE IN GOOD CONDITION. PLANTS THAT ARRIVE DRIED OUT, EXPOSED TO EXCESSIVE HEAT, OR HAVE BEEN IN STORAGE FOR EXTENDED PERIODS OF TIME, WILL NOT BE ACCEPTED. IF, UPON INSPECTION, THE PLANTS OR ROOT STOCKS DISPLAY MOLD OR DECAY, THE MATERIAL WILL NOT BE ACCEPTED.

F. ALL WOODY SHRUBS AND TREES SHALL HAVE A HEAVY FIBROUS ROOT SYSTEM THAT HAS BEEN DEVELOPED BY PROPER HORTICULTURAL TREATMENT, TRANSPLANTING, AND ROOT PRUNING. ALL SHRUBS AND SAPLINGS SHALL BE CONTAINER GROWN.

G. ALL PLUGS, CONTAINERIZED PLANTS, AND ROOT STOCKS THAT ARE TO BE PLACED IN SATURATED OR FLOODED SOIL CONDITIONS SHALL BE PRE–CONDITIONED FOR THIS PLACEMENT BY BEING HELD IN A WET ENVIRONMENT AT THE NURSERY PRIOR TO SHIPMENT TO THE SITE.

H. ALL PLANT STOCK SHALL BE STORED IN ABOVE GROUND LOCATIONS IN NON–CONSTRUCTION AREAS APPROVED BY THE ENGINEER IF NOT TRANSPLANTED DIRECTLY TO THE RESTORATION AREA. ALL PLANT STOCK SHALL HAVE SOIL PLACED ABOUT ROOTS SUFFICIENT TO PROTECT FROM DESICCATION AND TO PROVIDE NOURISHMENT DURING STORAGE. ALL PLANTS STORED IN THE FIELD PRIOR TO INSTALLATION SHALL BE KEPT COOL AND SHALL BE SHELTERED FROM THE DRYING EFFECTS OF DIRECT SUNLIGHT AND PREVAILING WINDS. PLANTS SHOULD NOT BE SUBJECT TO FREEZING, DRYING, OR EXCESSIVE HEAT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SUPPLY ADEQUATE WATER FOR ALL PLANT STOCK TO MAINTAIN IT IN A HEALTHY AND VIGOROUS STATE SUITABLE FOR TRANSPLANTING.

I. LIVE STAKES WILL BE DORMANT STEM CUTTINGS OF 1 TO 3 INCHES IN DIAMETER AT THE TOP AND AT LEAST 36 INCHES IN LENGTH. CUTTINGS WILL HAVE CLEAN ANGLED CUTS AT THE BOTTOM AND FLAT CUTS AT THE TOP, WITHOUT SPLIT ENDS, AND WILL HAVE AT LEAST TWO LIVE LATERAL BUDS ON THE PORTION OF THE STAKE THAT WILL BE ABOVE–GROUND. TRIM ANY LATERAL BRANCHES.

2.04 RIVER RUN ROCK

A. RIVER RUN ROCK WILL GENERALLY BE 6–INCH MEAN DIAMETER ROUNDED STONE WITH A MAXIMUM DIAMETER OF 9 INCHES.

2.05 EROSION CONTROL FABRICS

A. PERMANENT EROSION CONTROL MAT WILL BE NORTH AMERICAN GREEN SC250, OR EQUIVALENT.

B. TEMPORARY EROSION CONTROL MAT WILL BE NORTH AMERICAN GREEN SC150BN, OR EQUIVALENT.

2.06 GEOTEXTILE

A. GEOTEXTILE WILL BE MIRAFI FILTERWEAVE 700, OR EQUIVALENT.

PART 3 – EXECUTION

3.01 TOPSOIL PLACEMENT

A. MATERIALS

1. PREPARE TOPSOIL AS DESCRIBED IN SECTION 2.01 OF THIS SPECIFICATION.

2. VERIFY THAT TOPSOIL IS LOOSELY CONSOLIDATED WITH TILLING, IF NECESSARY. THE MATERIAL SHALL NOT CONTAIN CLODS LARGER THAN 2 INCHES.

3. REMOVE SURFACE DEBRIS, CLODS, AND STONES GREATER THAN 2 INCHES.

4. ESTABLISH A MINIMUM OF 6 INCHES OF TOPSOIL IN SPECIFIED RESTORATION LOCATIONS.

5. DO NOT COMPACT TOPSOIL PRIOR TO SEEDING AND/OR PLANTING.

3.02 SEEDING AND PLANTING

A. SEEDING

1. USE SEED STOCKS CONSISTENT WITH THE LISTINGS PROVIDED ON DRAWING G–5.2 AND IN THE QUANTITIES INDICATED. ALTERNATIVE MIXTURES AND APPLICATION FORMULAS MUST BE REVIEWED AND APPROVED FOR USE BY THE ENGINEER PRIOR TO INSTALLATION. WETLAND SEED IS SPECIFIED UNDER THE WILDFLOWER NATIVE GRASSES AND SEDGES, AND TEMPORARY GRASS HEADINGS IN TABLE A ON DRAWING G–5.2. UPLAND FOREST SEED IS SPECIFIED IN TABLE B ON DRAWING G–5.2. THE APPLICATIONS OF THESE SEED MIXES ARE PRESENTED ON DRAWINGS R–1.1 THROUGH R–1.7. UPLAND SEED MIX WILL BE USED TO RESTORE ACCESS ROADS AND STAGING AREAS UNLESS SPECIFIED OTHERWISE BY THE PROPERTY OWNER.

2. PERFORM SEEDING WITHIN THE TIME GUIDELINES SPECIFIED IN SUBSECTIONS C AND D OF THIS SECTION.

3. SHALLOW DISC AND SUBSEQUENTLY RAKE THE SEEDBED OF THE AREAS TO BE SEEDED TO PROVIDE A UNIFORM AND FIRM SEEDBED, FREE OF ALL LIVE PLANT MATERIALS, INCLUDING PERENNIAL RHIZOMES. IF THE SOIL IS SATURATED, TILLING MAY NOT BE NECESSARY.

4. ENSURE THE ENTIRE AREA RECEIVES SEED. RESEED AREAS WITH GAPS IN THE AREAS OF SEEDING IN EXCESS OF 8 SQUARE FEET.

5. WHERE SATURATED SOILS MAKE THE USE OF MECHANICAL SEEDING EQUIPMENT IMPRACTICAL, THE BROADCAST OR HYDROSEEDING METHODS MAY BE USED WITH THE PRIOR APPROVAL OF THE ENGINEER.

6. EMPLOY THE BROADCAST METHOD TO PUT ANNUAL AND SHORT–LIVED PERENNIALS INTO THE RESTORATION AREAS. LIGHTLY RAKE BROADCAST AREAS WITHIN 12 HOURS TO ENSURE PROPER SOIL–SEED CONTACT.

7. SEEDING RATES SHALL BE AS SPECIFIED IN THE ATTACHMENTS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

8. MARK SEEDED AREAS TO PREVENT INTRUSION BY FOOT TRAFFIC AND/OR EQUIPMENT.

9. PERFORM AN INITIAL WATERING OF SEEDED AREAS AT A RATE OF 25,000 GALLONS PER ACRE, AND REPEATED AFTER THE SECOND AND FOURTH WEEKS FOLLOWING SEEDING IF NATURAL RAINFALL IS LESS THAN 1 INCH PER WEEK. THE CONTRACTOR SHALL AVOID CREATING RILLS AND FURROWS AS A RESULT OF WATERING AND MUST REPAIR AND RESEED ANY RILLS AND FURROWS RESULTING FROM OVER WATERING.

B. PLANTING

1. USE SPECIES, PLANT TYPES, SIZES, AND SPACING DENSITIES AS PRESENTED ON DRAWING G–5.2.

2. DIG PITS AND BEDS AT LEAST 6 INCHES WIDER AND DEEPER THAN THE PLANT ROOT SYSTEM TO BE INSTALLED IN THAT LOCATION.

3. REMOVE NON–BIODEGRADABLE CONTAINERS PRIOR TO PLANTING.

4. SET PLANTS INTO THEIR FINAL LOCATIONS FOLLOWING RECOMMENDED HORTICULTURAL PRACTICE FOR THAT SPECIES, TAKING SPECIFIC NOTE TO PLANT EMERGENT PLANTS AT THE SHALLOW END OF THEIR DEPTH TOLERANCES. PLANT HYDROPHYTES IN GROUPINGS TO ESTABLISH VEGETATIVE COMMUNITIES.

5. SUPPORT TREE SAPLINGS WITH TWO STAKES AND TWO TIES.

6. PROVIDE AND INSTALL WOOD CHIP MULCH BY HAND TO FORM A CONTINUOUS BLANKET OVER THE SOIL SURROUNDING THE PLANT, APPROXIMATELY 2 INCHES UNIFORM THICKNESS AT LOOSE MEASUREMENT.

7. PERFORM AN INITIAL WATERING OF PLANTED AREAS AT A RATE OF 25,000 GALLONS PER ACRE, AND REPEATED AFTER THE SECOND AND FOURTH WEEKS FOLLOWING PLANTING IF NATURAL RAINFALL IS LESS THAN 1 INCH PER WEEK. THE CONTRACTOR SHALL AVOID CREATING RILLS AND FURROWS AS A RESULT OF WATERING AND MUST REPAIR AND RESEED ANY RILLS AND FURROWS RESULTING FROM OVER WATERING.

8. INSTALL LIVE STAKES WITH ANGLED END DOWN AT LEAST 2 FEET INTO THE GROUND BY MANUALLY PUSHING OR DRIVING WITH A WOODEN MAUL. THE STAKE MUST NOT BE SPLIT AND THE BARK SHOULD NOT BE EXCESSIVELY DAMAGED DURING INSTALLATION. DRIVEN STAKES SHOULD BE RECUT TO PROVIDE A NEW FLAT SURFACE. INSTALL STAKES TO AT LEAST 50% OF THEIR LENGTH WITH THE TERMINAL BUD SCAR WITHIN 4 INCHES OF THE TOP. LIVE STAKES WILL BE INSTALLED IN TWO PARALLEL ROWS ALONG THE BANK AT 5–FOOT SPACING ON CENTER.

C. ENVIRONMENTAL REQUIREMENTS OF SEEDING AND PLANTING

1. DO NOT APPLY SEED SLURRY WHEN WIND CONDITIONS ARE SUCH THAT MATERIALS WOULD BE CARRIED BEYOND DESIGNATED AREAS OR THAT MATERIALS WOULD NOT BE UNIFORMLY APPLIED AND WHEN WIND VELOCITY EXCEEDS 5 MILES PER HOUR.

2. SEEDING ACTIVITIES SHOULD NOT BE CARRIED OUT ON DAYS WITH HEAVY PRECIPITATION WHICH WILL RESULT IN THE WASHING OF SEED INTO THE BODY OF WATER WHERE THEY WILL NOT SURVIVE.

3. DO NOT INSTALL PLANT LIFE WHEN THE TEMPERATURE MAY RISE ABOVE 90 DEGREES F.

4. DO NOT INSTALL PLANT LIFE WHEN THE WIND VELOCITY EXCEEDS 30 MILES PER HOUR.

D. SEQUENCING AND SCHEDULING

1. SCHEDULE TOPSOIL PLACING TO PERMIT SEEDING AND PLANTING OPERATIONS UNDER OPTIMUM GROWING CONDITIONS DURING NORMAL PLANTING SEASONS.

2. INSTALL BARE ROOT WOODY PLANTS WHILE STILL DORMANT BETWEEN FEBRUARY 1 AND APRIL 1 IF GROUND IS NOT FROZEN OR BUDS HAVE NOT BROKEN DORMANCY. FALL PLANTING AFTER OCTOBER 15 IS ACCEPTABLE ONLY WITH SPECIES APPROVED BY THE ENGINEER WITH ROOT–BALLED OR CONTAINERIZED MATERIAL ONLY.

3. SHRUBS SHALL BE CONTAINER–GROWN AND INSTALLED AFTER MAY 15 AND PRIOR TO GROUND FREEZE. SEEDS MAY BE PLANTED AT ANY TIME OF THE YEAR EXCEPT BETWEEN AUGUST 1 AND OCTOBER 1.

4. PERFORM SEEDING OPERATIONS FOR PERMANENT COVER BETWEEN APRIL 1, OR AS SOON THEREAFTER AS THE SOIL CAN BE WORKED, AND JULY 30. SEEDING MAY ALSO BE DONE FROM OCTOBER 1 TO FREEZE–UP. SEEDING IS NOT RECOMMENDED BETWEEN AUGUST 1 AND OCTOBER 1.

E. VEGETATION MAINTENANCE

1. MAINTAIN PLANTED AREAS UNTIL ACCEPTED BY THE ENGINEER. MAINTENANCE RESPONSIBILITIES BEGIN IMMEDIATELY AFTER PLANTING AND CONTINUE THROUGH AT LEAST THREE FULL GROWING SEASONS FOLLOWING THE YEAR OF PLANTING.

2. MAINTENANCE RESPONSIBILITIES INCLUDE CONTROL OF HERBIVORES AND OTHER VECTORS THAT THREATEN THE ESTABLISHMENT OF THE DESIRED PLANT COMMUNITY; ACTS OF VANDALISM RESULTING IN DAMAGE TO PLANTED VEGETATION; AND ACTS OF NATURE RESULTING IN EROSIONS, FIRES, WIND DAMAGE, ICE STORMS, AND SIMILAR SITUATIONS. THE CONTRACTOR SHALL TAKE NECESSARY ACTION TO CORRECT AND RESTORE THE SYSTEM.

3. NOTIFY THE ENGINEER PRIOR TO AND FOLLOWING ANY MAINTENANCE ACTIVITY.

4. AT A MINIMUM, PERFORM MAINTENANCE IN THE SPRING AND FALL BEFORE OPTIMAL PLANTING AND SEEDING SEASON.

5. REPLACE DEAD OR UNHEALTHY PLANTS WITH PLANTS OF THE SAME SIZE AND SPECIES AS SPECIFIED AND PLANTED IN THE NEXT GROWING SEASON AND SUBJECT TO MAINTENANCE EFFORTS TO ASSURE THEIR SURVIVAL. SPECIES SUBSTITUTIONS WILL BE ALLOWED WITH ENGINEER APPROVAL.

F. PROTECTION OF FINISHED WORK

1. MARK SEEDED AND PLANTED AREAS TO PREVENT INTRUSION BY FOOT TRAFFIC AND/OR EQUIPMENT.

2. INSTITUTE MEASURES TO PROTECT COMPLETED LANDSCAPE AREAS.

3.03 PLACEMENT OF EROSION CONTROL MAT

A. INSTALL EROSION CONTROL MATS OVER SEEDED AREAS AND KEYED IN WITH ROCK OR SOIL AT THE TOP, BOTTOM, AND UPSTREAM ENDS.

B. OVERLAP ADJACENT MATS BY AT LEAST 3 FEET WITH UPSTREAM MATS OVER DOWNSTREAM MATS AND TOP OF BANK MATS OVER LOWER BANK MATS.

C. USE LIVE, BIODEGRADABLE STAKES TO ANCHOR THE MAT, WHERE SPECIFIED.

D. INSTALL WOODY PLANTINGS THROUGH THE MATS.

E. STAKE MATS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.		
Professional Engineer's No.: 6201046373		
State: MICHIGAN	Date Signed:	Project Mgr.: SDG
Designed by: ANE	Drawn by: AGS	Checked by: ANE

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

GENERAL NOTES AND SPECIFICATIONS

GENERAL

ARCADIS Project No.: B0064539.0000.00670

Date: JULY 2009

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G-5.1

TABLE A - LIST OF POTENTIAL SPECIES FOR REVEGETATION

COMMON NAME	SCIENTIFIC NAME	WETLAND INDICATOR STATUS (1)	EMERGENT WETLAND	FORESTED WETLAND	FORESTED UPTLAND
TREES:					
RIVER BIRCH	BETULA NIGRA	FACW		X	
EASTERN REDBUD	CERCIS CANADENSIS	FACU			X
BLACK WALNUT	JUGLANS NIGRA	FACU			X
SYCAMORE	PLATANUS OCCIDENTALIS	FACW		X	
SWAMP WHITE OAK	QUERCUS BICOLOR	FACW+		X	
PIN OAK	QUERCUS PALUSTRIS	FACW		X	
RED OAK	QUERCUS RUBRA	FACU			X
AMERICAN ELM	ULMUS AMERICANA	FACW-			X
SHRUBS:					
SPECKLED ALDER	ALNUS INCANA	OBL		X	
BLACK CHOKECHERRY	ARONIA MELANCARPA	FACW-			X
BUTTONBUSH	CEPHALANTHUS OCCIDENTIALIS	OBL		X	
REDOSIER DOGWOOD	CORNUS SERICEA	FACW		X	
ALTERNATE-LEAF DOGWOOD	CORNUS ALTERNIFOLIA	NI			X
SILKY DOGWOOD	CORNUS AMOMUM	FACW+		X	
GRAY-STEM DOGWOOD	CORNUS RACEMOSA	NI			X
NORTHERN SPICEBUSH	LINDERA BENZOIN	FACW-			X
PUSSY WILLOW	SALIX DISCOLOR	FACW		X	
ELDERBERRY	SAMBUCUS CANADENSIS	FACW-		X	
WILDFLOWERS:			3 LBS/ACRE	4.5 LBS/ACRE	
NEW ENGLAND ASTER	ASTER NOVAE-ANGLIAE	FACW	X	X	
TALL COREOPSIS	COREOPSIS TRIPTERIS	FAC	X	X	
JOE-PYE-WEED	EUPATORIUM MACULATUM	OBL	X	X	
BONESET	EUPATORIUM PERFOLIATUM	FACW+	X	X	
DENSE BLAZINGSTAR	LIATRIS SPICATA	FAC	X	X	
MOUNTAIN MINT	PYCNANTHEMUM VIRGINIANUM	FACW+	X	X	
GREEN-HEADED CONEFLOWER	RUDBECKIA LACINIATA	FACW+	X	X	
NATIVE GRASSES AND SEDGES:			15 LBS/ACRE	9 LBS/ACRE	
WETLAND SEDGES	CAREX SPP.	UPL - OBL	X	X	
SWITCH GRASS	PANICUM VIRGATUM	FAC+	X	X	
WOOL GRASS	SCIRPUS CYPERINUS	OBL	X		
PRAIRIE CORD GRASS	SPARTINA PECTINATA	FACW+	X	X	
TEMPORARY GRASSES:			15 LBS/ACRE	16.5 LBS/ACRE	
SEED OATS	AVENA SATIVA	NI	X	X	
ANNUAL RYE	LOLIUM MULTIFLORUM	NI	X	X	
AMERICAN SLOUGH GRASS	BECKMANNIA SYZIGACHNE	OBL	X	X	

TABLE B - FORESTED UPLAND SEED MIX

COMMON NAME	SCIENTIFIC NAME
TEMPORARY GRASSES:	50%
SEED OATS	AVENA SATTIVA
INDIAN TOBACCO	LOBELLA INFLATA
ANNUAL RYE	LOLIUM MULTIFORUM
NATIVE GRASSES AND SEDGES:	30%
THICKSPIKE WHEATGRASS	AGROPYRON DASYSTACHYUM
CANADA BLUEJOINT	CALAMAGROSTIS CANADENSIS
PRAIRIE OVAL SEDGE	CAREX BICKNELLI
PLAINS OVAL SEDGE	CAREX BREVIOR
SAND BRACTED SEDGE	CAREX MUHLENBERGII
CANADA WILD RYE	ELYMUS CANADENSIS
JUNEGRASS	KOLERIA MACRANTHA
LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM
INDIAN GRASS	SORGHASTRUM NUTANS
SAND DROPSEED	SPOROBOLUS CRYPTANDRUS
NATIVE WILDFLOWERS:	20%
THIMBLEWEED	ANEMONE VIRGIANA
COMMON MILKWEED	ASCLEPIAS SYRIACA
BUTTERFLY WEED	ASCLEPIAS TUBEROSE
SMOOTH ASTER	ASTER LAEVIS
ARROW-LEAVED ASTER	ASTER SAGITTIFOLIUS
LANCELEAF COREOPSIS	COREOPSIS LANCEOLATA
TALL COREOPSIS	COREOPSIS TRIPTERIS
PRAIRIE TICK TREFOIL	DESMODIUM ILLINOENSE
FLOWERING SPURGE	EUPHORBIA COROLLATA
ROUNDHEAD BUSHCLOVER	LESPEDEZA CAPITATA
ROUGH BLAZING STAR	LIATRIS ASPERA
LUPINE	LUPINUS PERENNIS
BERGAMOT, BEE BALM	MONARDA FISTULOSA
HORSE MINT	MONARDA PUNCTATA
EVENING PRIMROSE	OENOTHERA BIENNIS
YELLOW CONEFLOWER	RATIBITA PINNATA
BLACK-EYED SUSAN	RUDBECKIA HIRTA
PRAIRIE DOCK	SILPHIUM TEREBINTHINACEUM
STIFF GOLDENROD	SOLIDAGO RIGIDA
SHOWY GOLDENROD	SOLIDAGO SPECIOSA
HOARY VERVAIN	VERBEBA STICTA
AMERICAN VETCH	VICIA AMERICANA
TOTAL POUNDS PER ACRE	30 LBS.

TABLE C - PLANTING SCHEDULE

PLANTING ZONE	SPECIES	PLANT TYPE	SIZE	NUMBER TO BE PLANTED	DENSITY	SPACING	COMMENTS
EMERGENT WETLANDS	HERBACEOUS SEE TABLE A	SEED	NA	NA	30 LBS/ACRE	RANDOM	BROADCAST OR HYDROSEEDED
FORESTED WETLANDS	HERBACEOUS SEE TABLE A	SEED	NA	NA	30 LBS/ACRE	RANDOM	BROADCAST OR HYDROSEEDED
	SHRUBS:						
	ALNUS INCANA	1-GALLON CONTAINER	>18-IN HEIGHT	LOCATION-SPECIFIC, BASED ON AREA	225/ACRE	CLUMPS OF 2-3 SAME SPECIES, RANDOMLY DISTRIBUTED BUT AT LEAST 5-FT APART	EVEN DISTRIBUTION AMONG SPECIES
	CEPHALANTHUS OCCIDENTALIS	1-GALLON CONTAINER	>18-IN HEIGHT				
	CORNUS AMOMUM	1-GALLON CONTAINER	>18-IN HEIGHT				
	CORNUS SERICEA	1-GALLON CONTAINER	>18-IN HEIGHT				
	SALIX DISCOLOR	1-GALLON CONTAINER	>18-IN HEIGHT				
	SAMBUCUS CANADENSIS						
	SAPLINGS:						
	BETULA NIGRA	5-GALLON CONTAINER, OR ROOT BALLED	>48-IN HEIGHT; >1-IN D	LOCATION-SPECIFIC BASED ON AREA	75/ACRE	CLUMPS OF 2-3 SAME SPECIES, RANDOMLY DISTRIBUTED BUT AT LEAST 10-FT APART	EVEN DISTRIBUTION AMONG SPECIES
	QUERCUS BICOLOR	5-GALLON CONTAINER, OR ROOT BALLED	>48-IN HEIGHT; >1-IN D				
	PLATANUS OCCIDENTALIS	5-GALLON CONTAINER, OR ROOT BALLED	>48-IN HEIGHT; >1-IN D				
	QUERCUS PALUSTRIS	5-GALLON CONTAINER, OR ROOT BALLED	>48-IN HEIGHT; >1-IN D				
FORESTED UPLANDS	HERBACEOUS SEE TABLE B	SEED	NA	NA	30 LBS/ACRE	RANDOM	BROADCAST OR HYDROSEEDED
	SHRUBS:	1-GALLON CONTAINER	>18-IN - HEIGHT	LOCATION-SPECIFIC BASED ON AREA	225/ACRE	CLUMPS OF 3 SAME SPECIES, RANDOMLY DISTRIBUTED BUT AT LEAST 5-FT APART	EVEN DISTRIBUTION AMONG SPECIES
	ARONIA MELACARPA	1-GALLON CONTAINER	>18-IN - HEIGHT				
	CORNUS ALTERNIFOLIA	1-GALLON CONTAINER	>18-IN - HEIGHT				
	CORNUS RACEMOSA	1-GALLON CONTAINER	>18-IN - HEIGHT				
	LINDERA BENZOIN	1-GALLON CONTAINER	>18-IN - HEIGHT				
	SAPLINGS:						
	QUERCUS RUBRA	5-GALLON CONTAINER, OR ROOT BALLED	>48-IN HEIGHT; >1-IN D	LOCATION-SPECIFIC BASED ON AREA	75/ACRE	CLUMPS OF 3 SAME SPECIES, AT LEAST 10-FT APART	EVEN DISTRIBUTION AMONG SPECIES
	CERCIS CANADENSIS	5-GALLON CONTAINER, OR ROOT BALLED	>48-IN HEIGHT; >1-IN D				
	JUGLANS NIGRA	5-GALLON CONTAINER, OR ROOT BALLED	>48-IN HEIGHT; >1-IN D				
	ULMUS AMERICANA	5-GALLON CONTAINER, OR ROOT BALLED	>48-IN HEIGHT; >1-IN D				

NOTE:

1. ACRONYMS:
   LBS = POUNDS
   NA = NOT APPLICABLE
   EL. = ELEVATION

WETLAND INDICATOR STATUS:
OBL=OBLIGATE WETLAND; OCCUR ALMOST ALWAYS (ESTIMATED PROBABILITY >99%) UNDER NATURAL CONDITIONS IN WETLANDS.

FACW=FACULTATIVE WETLAND; USUALLY OCCUR IN WETLANDS (ESTIMATED PROBABILITY 67%-99%), BUT OCCASIONALLY FOUND IN NON-WETLANDS.

FAC=FACULTATIVE; EQUALLY LIKELY TO OCCUR IN WETLANDS OR NON-WETLANDS (ESTIMATED PROBABILITY 34%-66%).

FACU=FACULTATIVE; USUALLY OCCUR IN NON-WETLANDS (ESTIMATED PROBABILITY 67%-99%), BUT OCCASIONALLY FOUND IN WETLANDS (ESTIMATED PROBABILITY 1%-33%).

UPL=OBLIGATE UPLAND; OCCUR IN WETLANDS IN ANOTHER REGION, BUT OCCUR ALMOST ALWAYS (ESTIMATED PROBABILITY >99%) UNDER NATURAL CONDITIONS IN NON-WETLANDS IN THE REGION SPECIFIED.

A POSITIVE (+) OR NEGATIVE (-) SIGN USED WITH THE INDICATOR STATUS MORE SPECIFICALLY DEFINES THE REGIONAL FREQUENCY OF OCCURRENCE IN WETLANDS.

THE POSITIVE SIGN INDICATES A FREQUENCY TOWARD THE HIGHER END OF THE CATEGORY (MORE FREQUENTLY FOUND IN WETLANDS).

A NEGATIVE SIGN INDICATES A FREQUENCY TOWARD THE LOWER END OF THE CATEGORY (LESS FREQUENTLY FOUND IN WETLANDS).

NO INDICATES THAT THERE IS NO INDICATOR STATUS FOR THE SPECIES.

REFERENCES:
(1) 1996 NATIONAL LIST OF VASCULAR PLANTS THAT OCCUR IN WETLANDS. UNITED STATES FISH AND WILDLIFE SERVICE, URL: HTTP://WWW.FWS.GOV/

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: ANE | Drawn by: AGS | Checked by: ANE

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

GENERAL NOTES AND SPECIFICATIONS

GENERAL

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009

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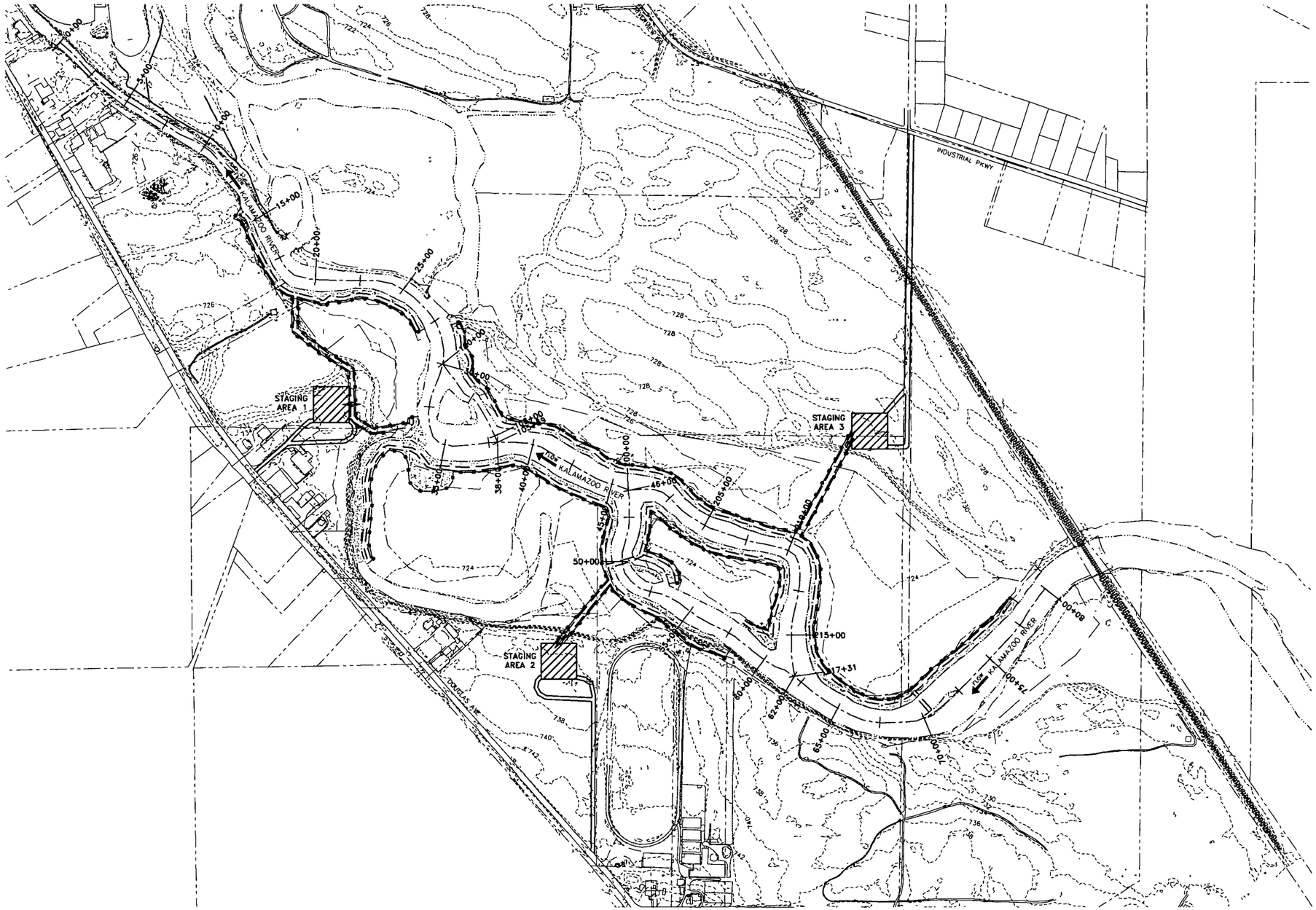
G-5.2



LEGEND:

- 60+00 — STATION POINT (IN HUNDREDS OF FEET)
- KALAMAZOO RIVER CENTERLINE AND STATION LINE
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- APPROX. LIMIT OF FIELD-BASED SURVEY
- APPROX. LIMIT OF DETAILED BANK SURVEY
- OFF-ROAD ACCESS ROUTE (1 / ES-2.1)
- GRAVEL ACCESS ROAD (2 / ES-2.1)
- SILT FENCE (3 / ES-2.1)
- GRAVEL ACCESS RAMP (4 / ES-2.1)
- STAGING AREA (SEE NOTE 3)
- EXCAVATION AREA

NOTES:

1. SEE DRAWING G-2.1 FOR BASE MAP INFORMATION.
2. ADDITIONAL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, NOT SHOWN HERE, MAY BE REQUIRED AT TIME OF CONSTRUCTION/EXCAVATION TO CONTROL EROSION AND SEDIMENTATION. SUCH ADDITIONAL MEASURES WILL BE IMPLEMENTED ON AN AS-NEEDED BASIS, IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY GUIDEBOOK OF BEST MANAGEMENT PRACTICES FOR MICHIGAN WATERSHEDS.
3. SEE DRAWINGS P-2.1 THROUGH P-3.1 FOR ADDITIONAL INFORMATION REGARDING LAYOUT OF STAGING AREAS.

CITY: SYRACUSE DWGGROUP: 141/ENV DB: AGS LD: AGS PIC: PN: SDG TM: LYR:ON=*;OFF=*REF*
G:\ENV\CAD\STRACUSE\ACTIVE\B0064539\0006\04\DWG\CONTRACT\64539ES1.DWG LAYOUT: ES-1_1 SAVED: 7/15/2009 8:53 AM ACADVER: 17.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 7/15/2009 8:54 AM BY: SAMIOS, ALEX
XREFS: 64539X00 64539X01 64539X02-C3D
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1"=300' (300' 0 300' 600')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: TAS | Drawn by: AGS | Checked by: (CHK)

ARCADIS U.S., INC.

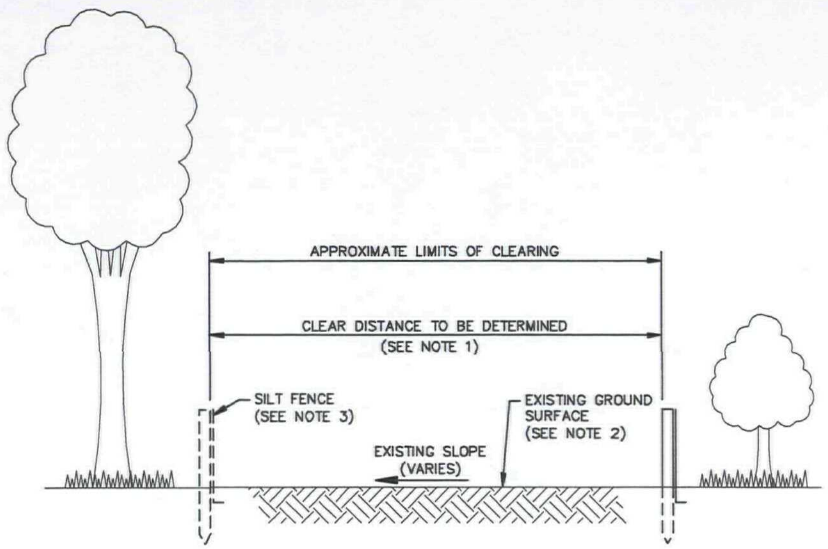
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION PLAN

EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION

ARCADIS Project No. B0064539.0000.00670
Date: JULY 2009
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60603-2404
TEL. 312.332.4937

ES-1.1

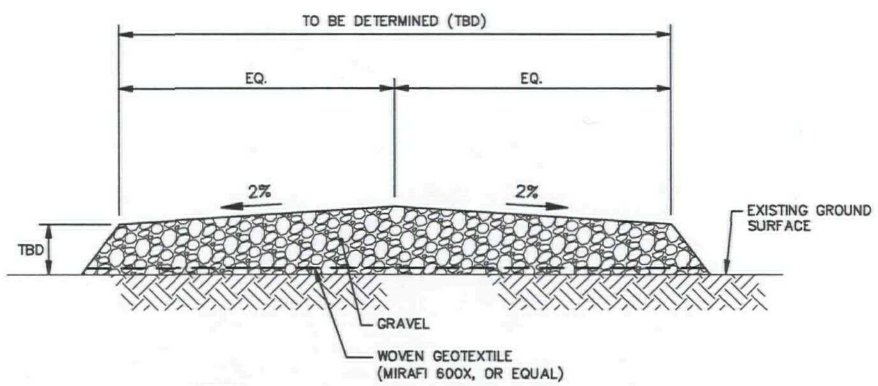


NOTES:

1. EXISTING VEGETATION SHALL BE CLEARED TO THE MINIMUM WIDTH NECESSARY TO PROVIDE ADEQUATE EQUIPMENT ACCESS. ACTUAL WIDTH OF CLEARING AND CLEAR DISTANCE BETWEEN SILT FENCES TO BE DETERMINED PRIOR TO START OF CONSTRUCTION BASED ON SPECIFIC TYPE OF OFF-ROAD VEHICLES PROPOSED FOR USE.
2. OFF-ROAD VEHICLES WILL TRAVEL OVER EXISTING (CLEARED) GROUND SURFACE. AMEND EXISTING GROUND SURFACE WITH GRAVEL AND/OR WOOD CHIPS AS NECESSARY TO FACILITATE TRAVEL.
3. SILT FENCE SHALL BE INSTALLED ALONG BOTH SIDES OF OFF-ROAD VEHICLE ACCESS ROUTES AS SHOWN ON DRAWING ES-1.1, UNLESS SHOWN OTHERWISE ON PLANS. SILT FENCE WILL NOT BE INSTALLED ALONG ROAD EDGES IMMEDIATELY ADJACENT TO EXCAVATION AREAS. POSITION SILT FENCE STAKES ON DOWNHILL SIDE OF FABRIC AND ANCHOR BOTTOM OF FABRIC IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS AND STANDARD INSTALLATION PRACTICES.

OFF-ROAD ACCESS ROUTE (1)

NOT TO SCALE

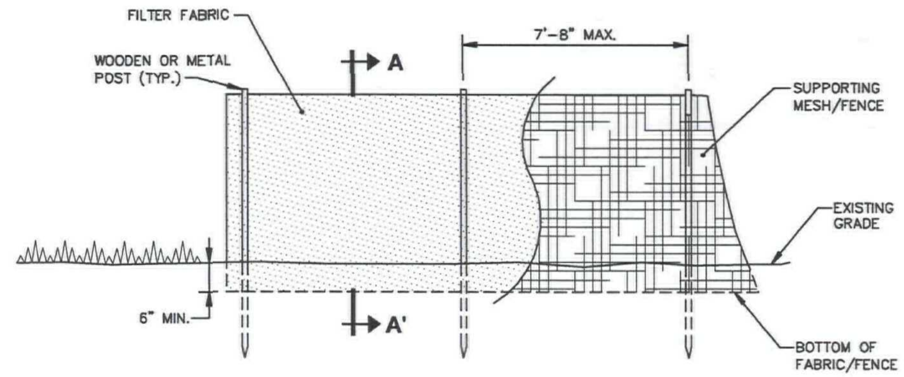


NOTE:

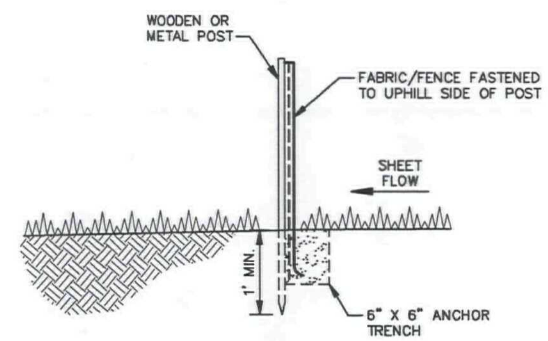
1. WIDTH AND THICKNESS OF GRAVEL ACCESS ROAD SHALL BE DETERMINED PRIOR TO START OF CONSTRUCTION BASED ON ANTICIPATED VEHICLE LOADING, EXISTING GROUND CONDITIONS, AND ANTICIPATED DURATION OF USE.

GRAVEL ACCESS ROAD (2)

NOT TO SCALE



FRONT VIEW



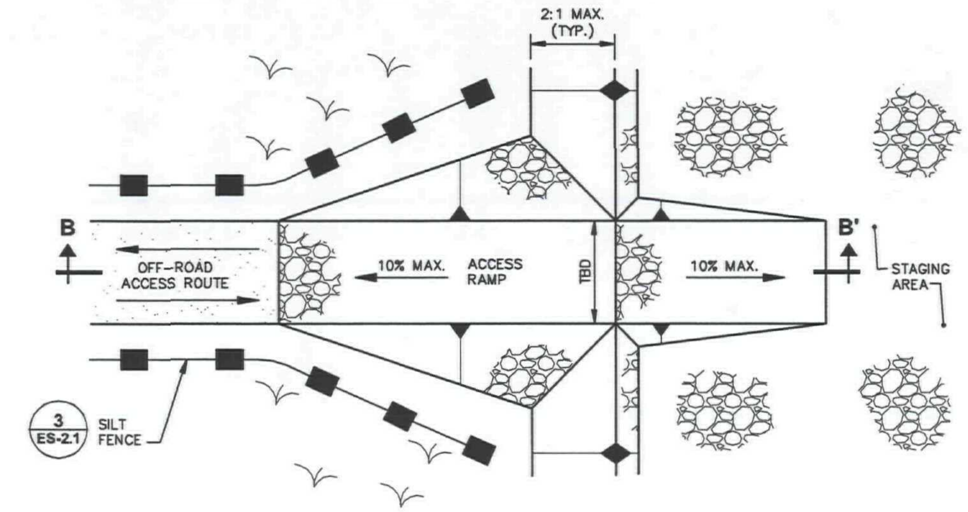
SECTION A-A'

NOTES:

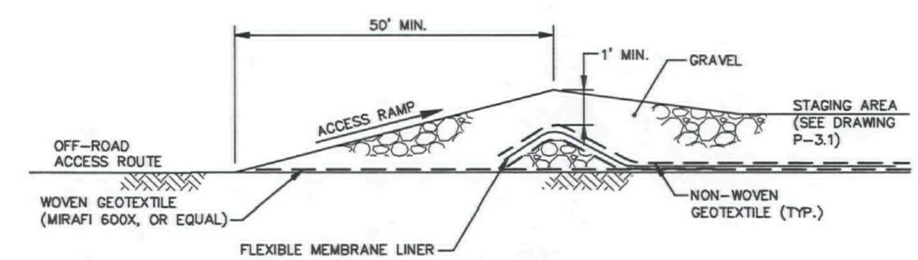
1. SILT FENCE SHALL MEET THE THE REQUIREMENTS FOR FILTER FENCE, AS PROVIDED IN THE LATEST VERSION OF THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY GUIDEBOOK OF BEST MANAGEMENT PRACTICES FOR MICHIGAN WATERSHEDS.
2. SILT FENCE SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE MDEQ BMP GUIDEBOOK.

SILT FENCE (3)

NOT TO SCALE



PLAN



SECTION B-B'

GRAVEL ACCESS RAMP (4)

NOT TO SCALE

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XREFS: 64539X00 IMAGES: PROJECTNAME: ---

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by	Drawn by	Checked by
TAS	AGS	(CHK)

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION DETAILS

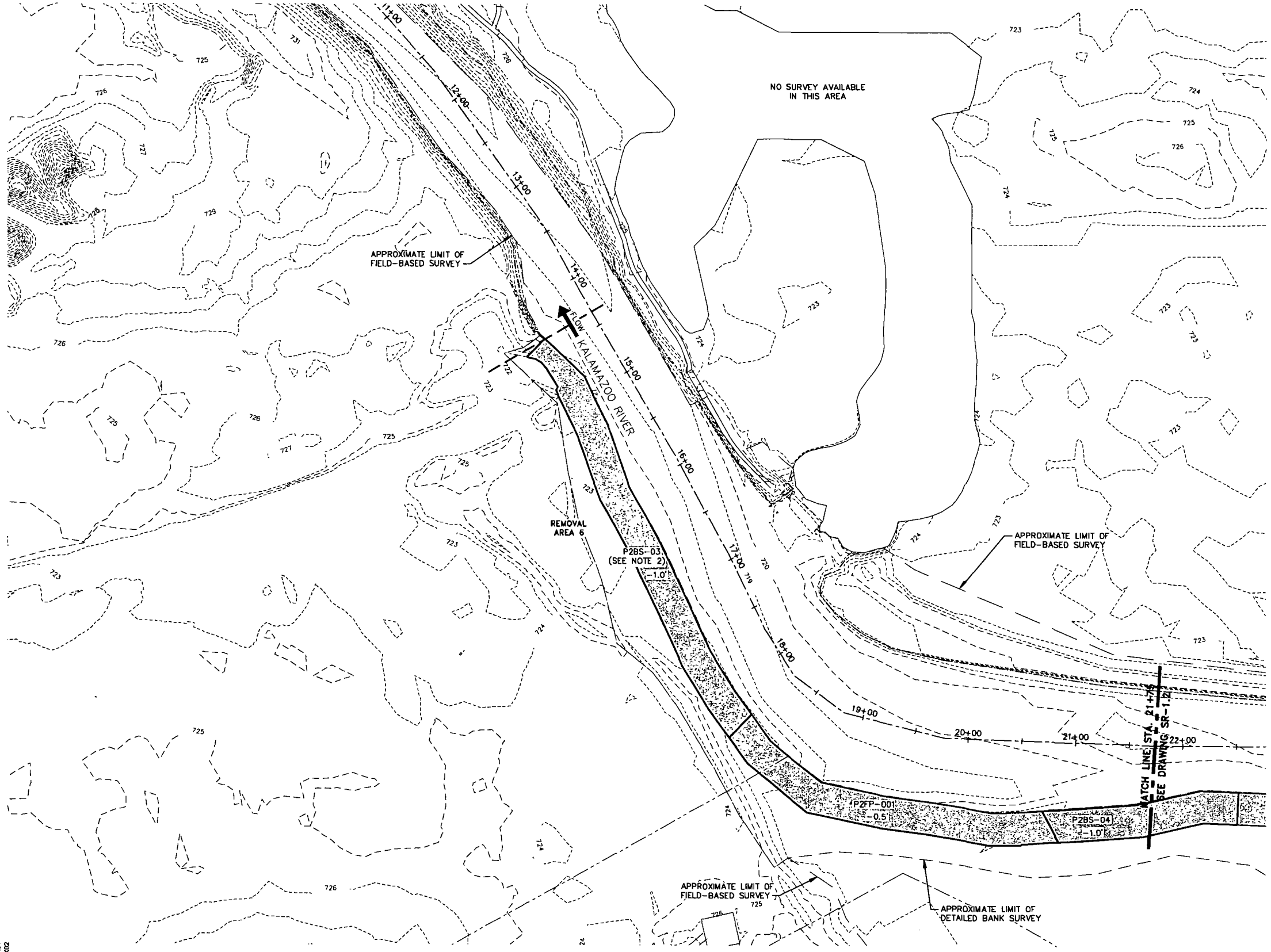
EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION

ARCADIS Project No. B0064539.0000.00670

Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

ES-2.1



REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2BS-04	TYPE A
P2FP-001	TYPE A
P2BS-03	TYPE D

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

LEGEND:

- 710 — EXISTING INDEX CONTOUR
- 711 — EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. LIMITS OF EXCAVATION SHOWN ARE APPROXIMATE. ACTUAL LIMITS OF EXCAVATION MAY VARY DEPENDING ON CONDITIONS REQUIRED TO ACHIEVE FULL 30-FT CLEAN BUFFER WIDTH (SEE SECTION 2.1.3.1 OF THE TCRA DESIGN REPORT FOR ADDITIONAL INFORMATION).

1"=50' (50' 0 50' 100')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (11+25 TO 21+75)

REMOVAL

ARCADIS Project No. B0064539.0000.00670
Date: JULY 2009
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

SR-1.1

XREFS:
64539X00
64539X01
64539X02

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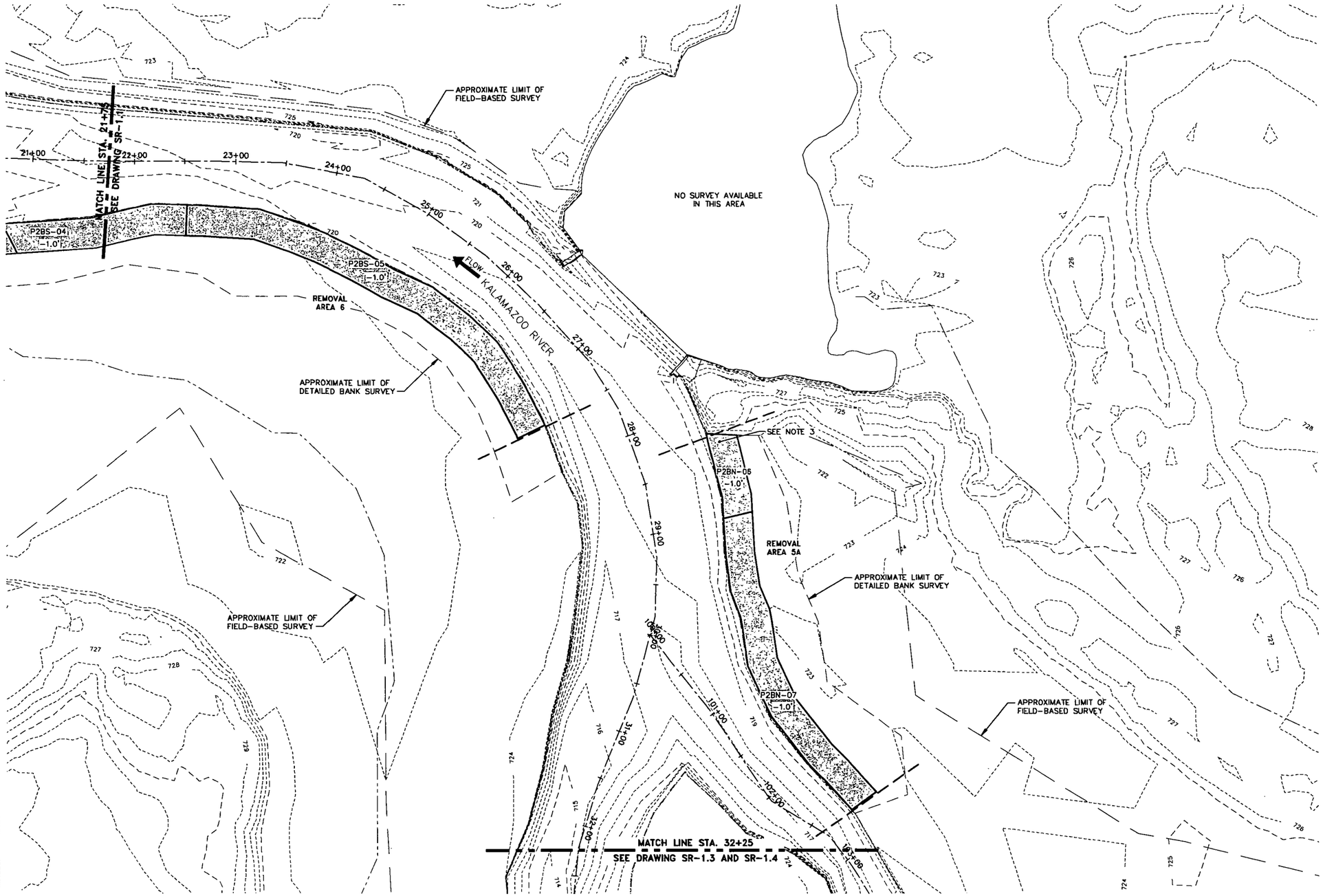

REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2BN-07	TYPE A
P2BN-06	TYPE B
P2BS-05	TYPE A
P2BS-04	TYPE A

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

LEGEND:

- 710 — EXISTING INDEX CONTOUR
- 711 — EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- 2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

1"=50' (50' 0 50' 100')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

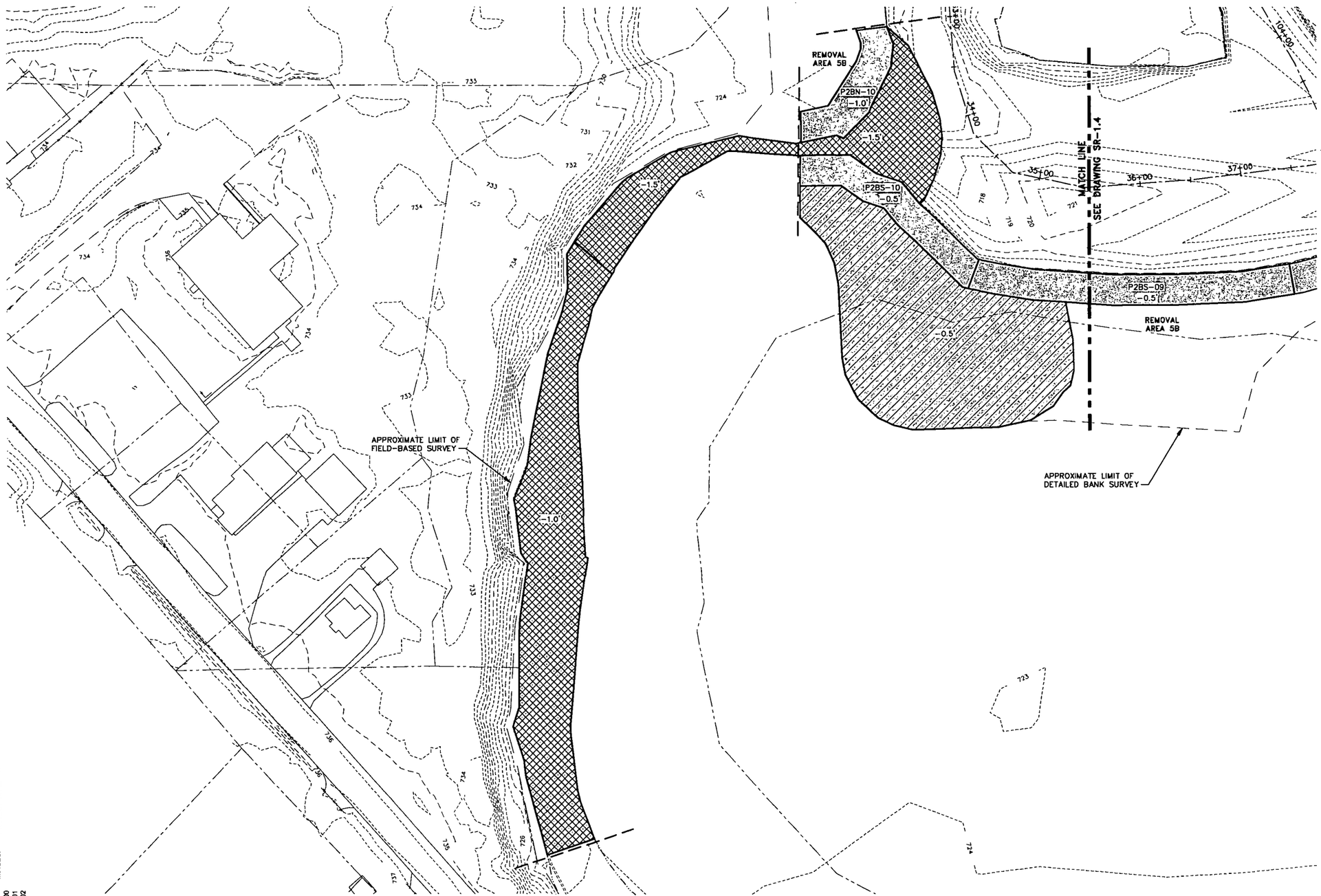
REMOVAL PLAN (21+75 TO 32+25)

GENERAL

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

SR-1.2



REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2BS-09	TYPE A*
P2BS-10	TYPE A*
P2BN-10	TYPE A*

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

* PORTIONS OF REMOVAL CELL INCLUDE ADDITIONAL FLOODPLAIN SOIL REMOVAL AND/OR SEDIMENT REMOVAL.

LEGEND:

- 710 — EXISTING INDEX CONTOUR
- 711 — EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)
- -1.5' UNIFORM DEPTH SEDIMENT REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)
- -0.5' UNIFORM DEPTH FLOODPLAIN REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

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1"=50' (50' 0 50' 100')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

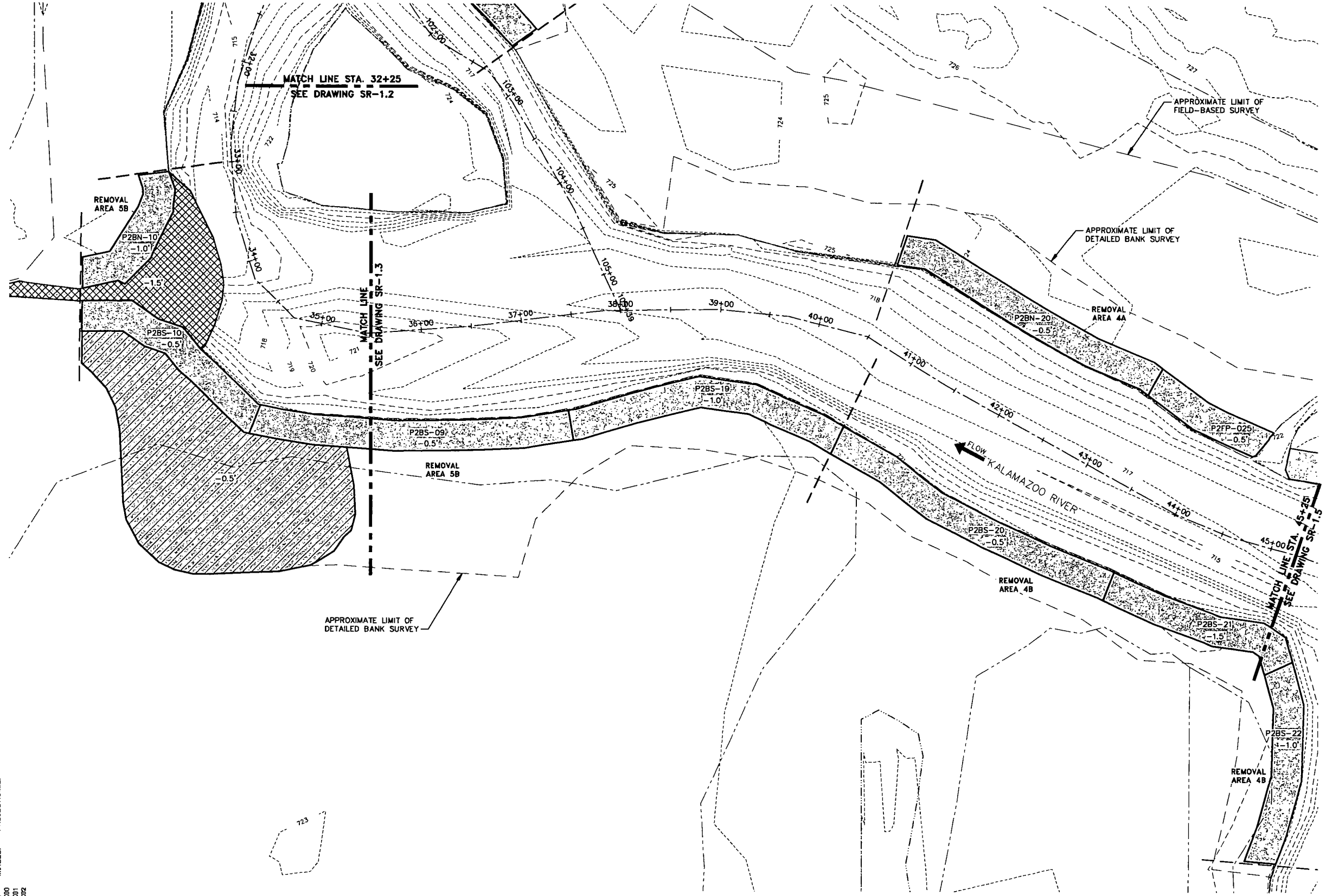
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (OXBOW)

REMOVAL

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009
ARCADIS, 30 W. MONROE ST., SUITE 1710, CHICAGO, IL 60648-2404, TEL. 312.332.4937

SR-1.3



REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2FP-025	TYPE B
P2BN-20	TYPE A
P2BS-22	TYPE A
P2BS-21	TYPE C
P2BS-20	TYPE B
P2BS-19	TYPE A
P2BS-09	TYPE A*
P2BS-10	TYPE A*
P2BN-10	TYPE A*

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

* PORTIONS OF REMOVAL CELL INCLUDE ADDITIONAL FLOODPLAIN SOIL REMOVAL AND/OR SEDIMENT REMOVAL.

LEGEND:

- 710 EXISTING INDEX CONTOUR
- 711 EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)
- -1.5' UNIFORM DEPTH SEDIMENT REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)
- -0.5' UNIFORM DEPTH FLOODPLAIN REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

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1"=50' (50' 0 50' 100')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

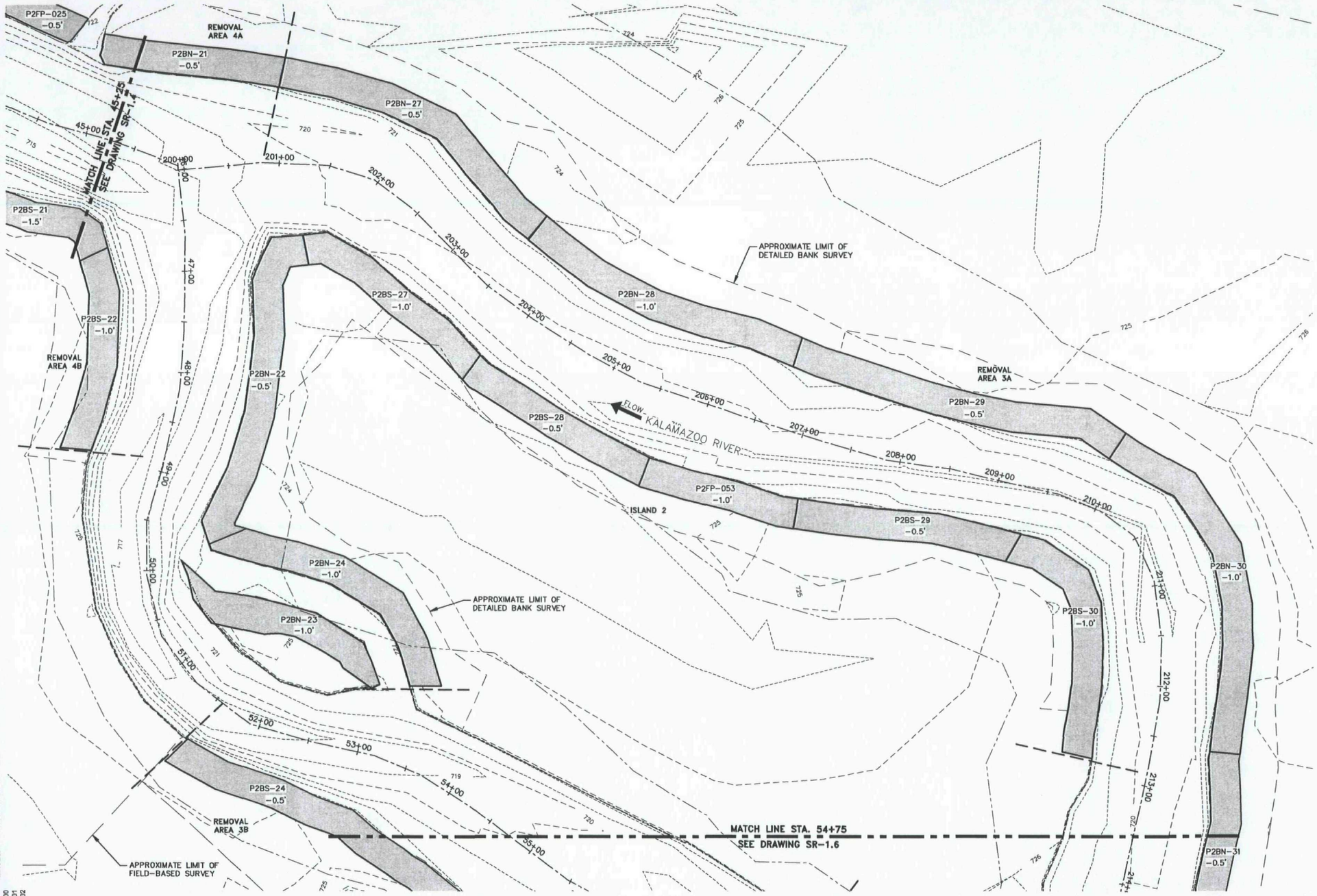
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (32+25 TO 45+25)

REMOVAL

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

SR-1.4



REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2BN-31	TYPE B
P2BN-30	TYPE A
P2BN-29	TYPE B
P2BN-28	TYPE B
P2BN-27	TYPE B
P2BN-21	TYPE B
P2FP-025	TYPE B
P2BS-30	TYPE B
P2BS-29	TYPE B
P2FP-053	TYPE A
P2BS-28	TYPE A
P2BS-27	TYPE A
P2BN-24	TYPE A
P2BN-23	TYPE B
P2BN-22	TYPE A
P2BS-24	TYPE A
P2BS-22	TYPE A
P2BS-21	TYPE C

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

LEGEND:

- 710 — EXISTING INDEX CONTOUR
- 711 — EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

CITY: SYRACUSE DIV/GROUP: 141/ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYRON="OFF="REF"
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64539X00
64539X01
64539X02

1"=50' (50' 0 50' 100')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by: DA	Drawn by: AGS	Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (45+25 TO 54+75)

REMOVAL

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009
ARCADIS, 30 W. MONROE ST., SUITE 1710, CHICAGO, IL 60448-2404, TEL. 312.332.4937

SR-1.5

MATCH LINE STA. 54+75
SEE DRAWING SR-1.5

APPROXIMATE LIMIT OF DETAILED BANK SURVEY

APPROXIMATE LIMIT OF FIELD-BASED SURVEY

P2BS-24 -0.5'

P2BS-25 (SEE NOTE 2) -1.0'

P2BN-26 -2.5'

P2BN-31 -0.5'

P2BN-32 -1.0'

P2BN-33 -1.0'

P2BN-34 -1.0'

ISLAND 2

REMOVAL AREA 3B

REMOVAL AREA 3A

REMOVAL AREA 2

FLOW KALAMAZOO RIVER

MATCH LINE STA. 67+25
SEE DRAWING SR-1.7

REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2BN-34	TYPE A
P2BN-33	TYPE A
P2BN-32	TYPE B
P2BN-31	TYPE B
P2BN-26	TYPE C
P2BS-25	TYPE D
P2BS-24	TYPE A

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

LEGEND:

- 710 — EXISTING INDEX CONTOUR
- 711 — EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. LIMITS OF EXCAVATION SHOWN ARE APPROXIMATE. ACTUAL LIMITS OF EXCAVATION MAY VARY DEPENDING ON CONDITIONS REQUIRED TO ACHIEVE FULL 30-FT CLEAN BUFFER WIDTH (SEE SECTION 2.1.3.1 OF THE TCRA DESIGN REPORT FOR ADDITIONAL INFORMATION).

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (54+75 TO 67+25)

REMOVAL

ARCADIS Project No. B0064539.0000.00670
Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

SR-1.6

XREFS: 645390X00 645390X01 645390X02

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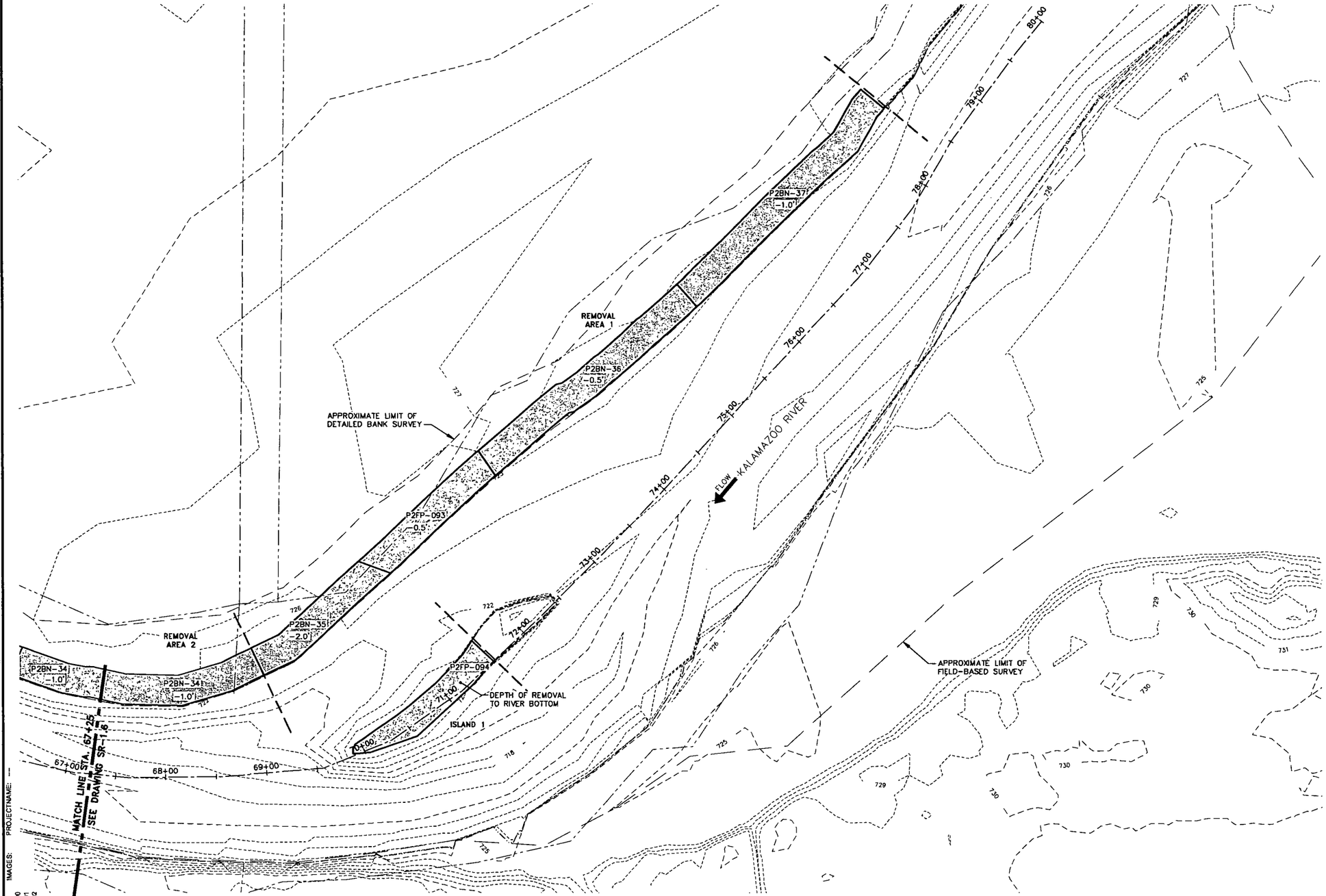

REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2BN-37	TYPE A
P2BN-36	TYPE A
P2FP-094	TYPE A
P2FP-093	TYPE A
P2BN-35	TYPE A
P2BN-34	TYPE A
P2BN-33	TYPE A
P2BN-32	TYPE B

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

LEGEND:

- 710 — EXISTING INDEX CONTOUR
- 711 — EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

1"=50' (50' 0 50' 100')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by: DA	Drawn by: AGS	Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (67+25 TO 80+00)

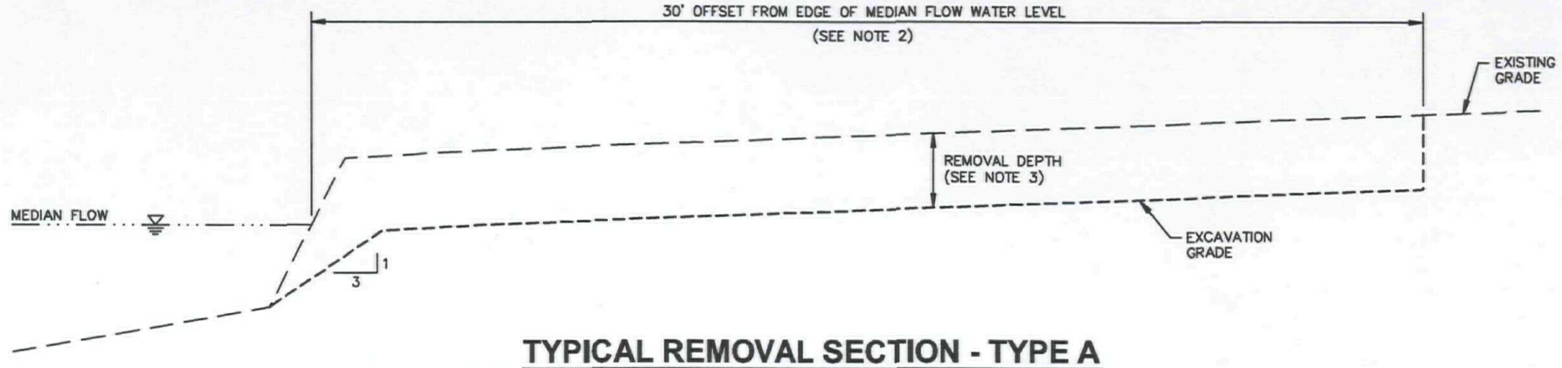
REMOVAL

ARCADIS Project No. B0064539.0000.00670

Date JULY 2009

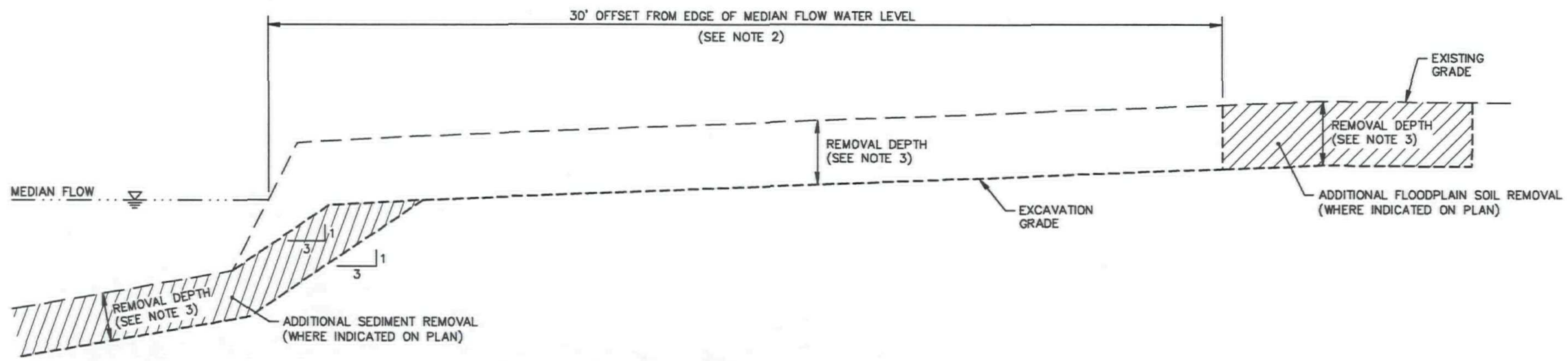
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

SR-1.7



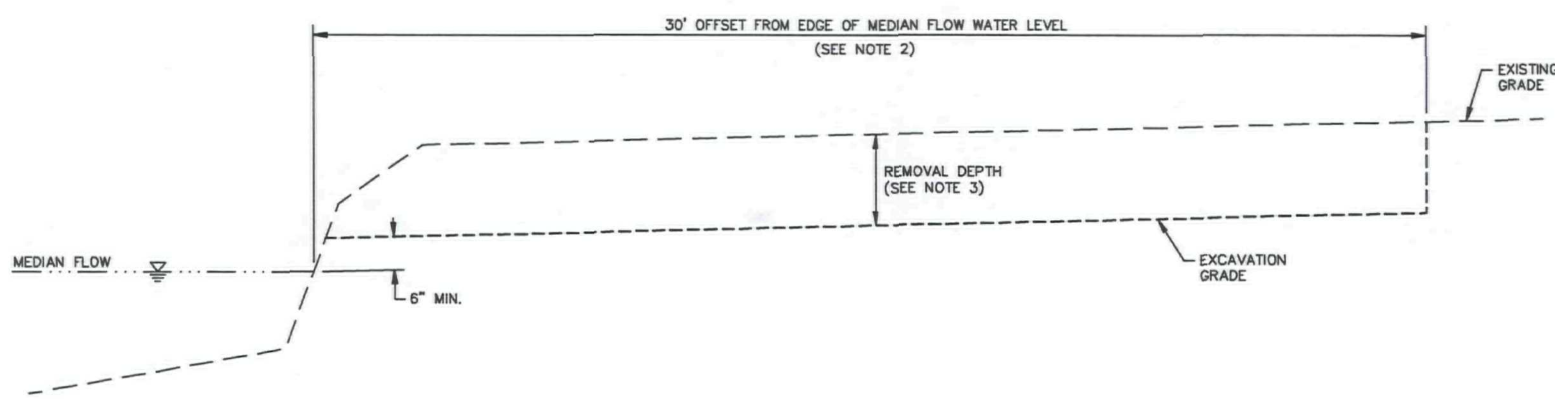
TYPICAL REMOVAL SECTION - TYPE A

NOT TO SCALE
(2X VERTICAL EXAGGERATION)



TYPICAL REMOVAL SECTION - TYPE A*

NOT TO SCALE
(2X VERTICAL EXAGGERATION)



TYPICAL REMOVAL SECTION - TYPE B

NOT TO SCALE
(2X VERTICAL EXAGGERATION)

NOTES:

1. REFER TO RESTORATION DRAWINGS R-1.1 THROUGH R-2.10 FOR FINAL GRADING REQUIREMENTS.
2. EXCAVATION LIMITS SHALL EXTEND BACK 30 FEET FROM MEDIAN WATER LINE, UNLESS OTHERWISE NOTED.
3. REFER TO REMOVAL DRAWINGS SR-1.1 THROUGH SR-1.7 FOR REMOVAL DEPTH REQUIREMENTS.
4. ADDITIONAL INFORMATION REGARDING FLOW ELEVATION IS PRESENTED IN SECTION 2 AND ATTACHMENTS A, B, C, AND E OF THE DESIGN REPORT.
5. IN AREAS WHERE IT IS NOT PROPOSED TO BACKFILL FULLY, THE LANDWARD SLOPE SHOULD BE GRADED TO 3H:1V.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS
ARCADIS U.S., INC.

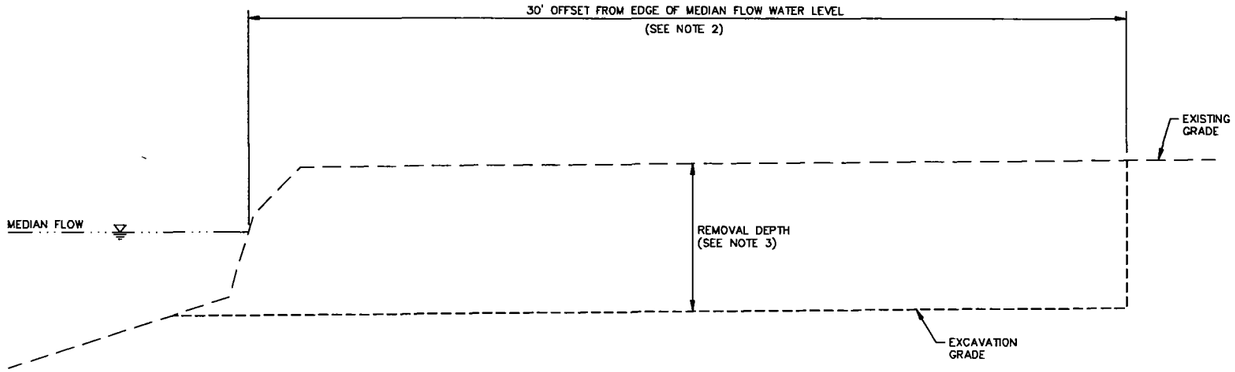
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

TYPICAL REMOVAL SECTIONS

REMOVAL

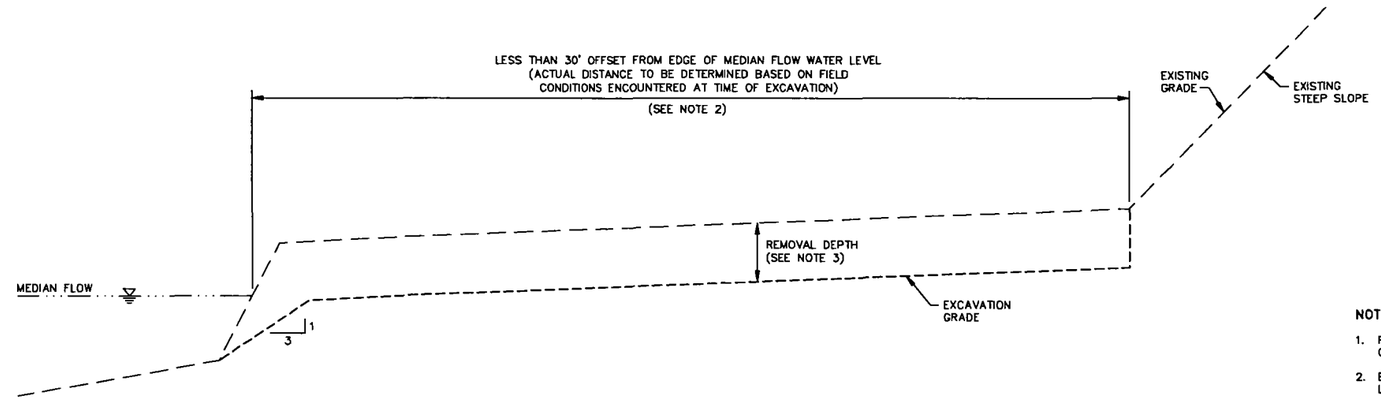
ARCADIS Project No. B0064539.0000.00670
Date JULY 2009
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

SR-2.1



TYPICAL REMOVAL SECTION - TYPE C

NOT TO SCALE
(2X VERTICAL EXAGGERATION)



TYPICAL REMOVAL SECTION - TYPE D

NOT TO SCALE
(2X VERTICAL EXAGGERATION)

NOTES:

1. REFER TO RESTORATION DRAWINGS R-1.1 THROUGH R-2.10 FOR FINAL GRADING REQUIREMENTS.
2. EXCAVATION LIMITS SHALL EXTEND BACK 30 FEET FROM MEDIAN WATER LINE, UNLESS OTHERWISE NOTED.
3. REFER TO REMOVAL DRAWINGS SR-1.1 THROUGH SR-1.7 FOR REMOVAL DEPTH REQUIREMENTS.
4. ADDITIONAL INFORMATION REGARDING FLOW ELEVATION IS PRESENTED IN SECTION 2 AND ATTACHMENTS A, B, C, AND E OF THE DESIGN REPORT.
5. IN AREAS WHERE IT IS NOT PROPOSED TO BACKFILL FULLY, THE LANDWARD SLOPE SHOULD BE GRADED TO 3H:1V.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
STEPHEN GARBACIAK JR.		
Professional Engineer's No.		
6201046373		
State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by	Drawn by	Checked by
DA	AGS	DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

TYPICAL REMOVAL SECTIONS

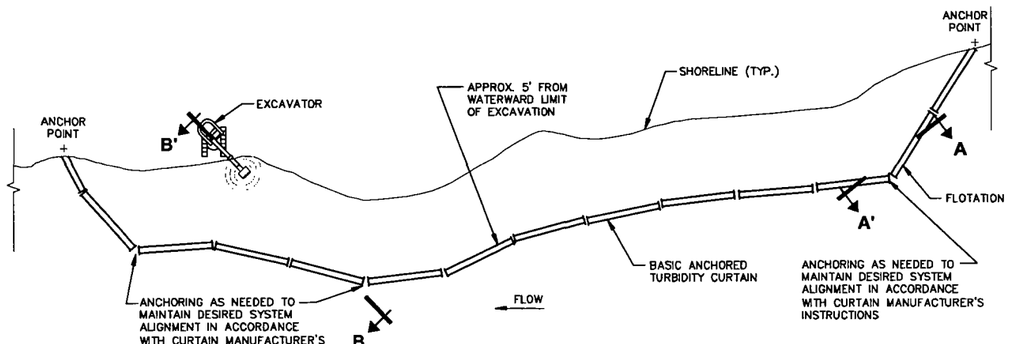
SEDIMENT REMOVAL

ARCADIS Project No.
B0064539.0000.00670

Date
JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

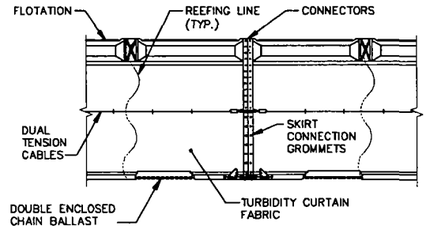
SR-2.2



BASIC SYSTEM - PLAN

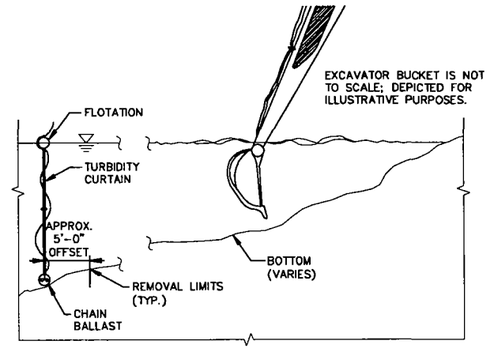
0 50' 100'

SCALE: 1"=50'



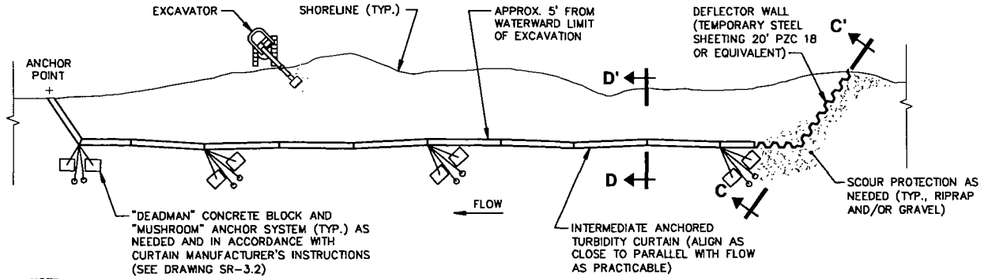
SECTION A-A'

NOT TO SCALE



SECTION B-B'

NOT TO SCALE



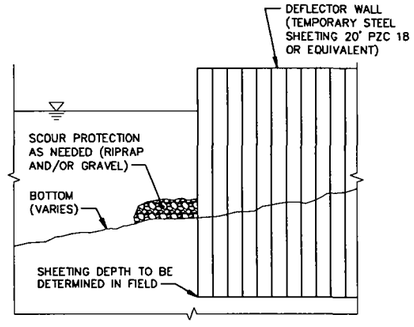
NOTE:

1. ANGLE OF DEFLECTOR WALL VS. FLOW IS DEPICTED AT 45 DEGREES, AND IS SUBJECT TO REVISION BASED ON FIELD CONDITIONS.

INTERMEDIATE SYSTEM - PLAN

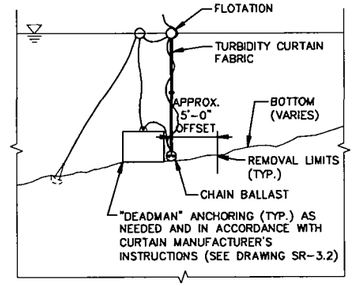
0 50' 100'

SCALE: 1"=50'



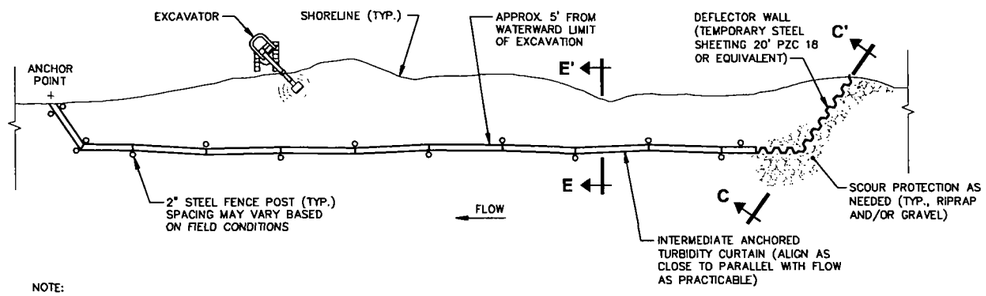
SECTION C-C'

NOT TO SCALE



SECTION D-D'

NOT TO SCALE



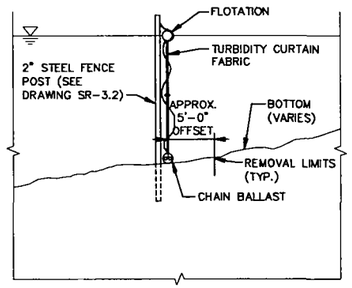
NOTE:

1. ANGLE OF DEFLECTOR WALL VS. FLOW IS DEPICTED AT 45 DEGREES, AND IS SUBJECT TO REVISION BASED ON FIELD CONDITIONS.

INTERMEDIATE ALTERNATIVE - PLAN

0 50' 100'

SCALE: 1"=50'



SECTION E-E'

NOT TO SCALE

GENERAL NOTES:

1. RESUSPENSION CONTROL SYSTEMS SHOWN ARE CONCEPTUAL IN NATURE AND ARE BASED ON INFORMATION PROVIDED BY MANUFACTURER.
2. RESUSPENSION SYSTEMS SHOWN MAY BE ADJUSTED IN THE FIELD BY THE CONTRACTOR BASED ON ACTUAL ENCOUNTERED CONDITIONS, UPON APPROVAL FROM THE CONSTRUCTION MANAGER.
3. DETAILS OF SYSTEMS PRESENTED ON DRAWING SR-3.2.
4. CONSTRUCTION OF TURBIDTY CURTAIN SIMILAR FOR ALL SYSTEMS. SEE DETAILS PRESENTED ON DRAWING SR-3.2.
5. "BASIC" AND "INTERMEDIATE" SYSTEMS REFER TO ANTICIPATED RANGES OF FLOW AND DEPTH THAT MAY BE ENCOUNTERED DURING WORK. THE CONTRACTOR MAY SELECT ANY SYSTEM OR PARTS OF SYSTEMS IT DEEMS PRUDENT TO MEET TURBIDITY CONTROL PERFORMANCE STANDARDS AS DESCRIBED IN THE DESIGN REPORT.

CITY: SYRACUSE DIVISION: 14 ENV DB: ACS LD: AGS PIC: PM: SDG TM: LYRON="OFF"REF" G:\ENV\CAD\SYRACUSE\ACT\B0064539\B0064539B0000\0064a01\DWG\CONTRACT\64539SR3.DWG LAYOUT: SR-3_1 SAVED: 7/14/2009 9:11 AM ACADVER: 17.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 7/14/2009 9:12 AM BY: SAMIOS, ALEX
XREFS: 64539000 IMAGES: PROJECTNAME: ---

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.		
Professional Engineer's No.: 6201046373		
State: MICHIGAN	Date Signed	Project Mgr.: SDG
Designed by: EJS	Drawn by: AGS	Checked by: EJS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESUSPENSION CONTROL SYSTEMS

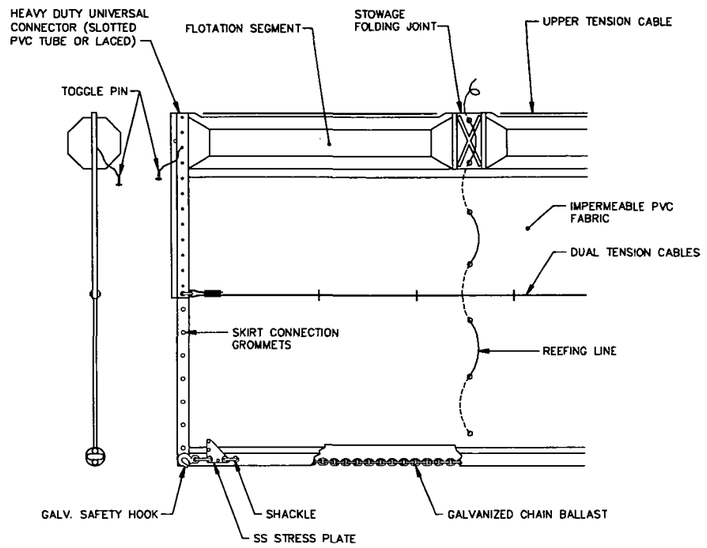
REMOVAL

ARCADIS Project No.: B0064539.0000.00670

Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

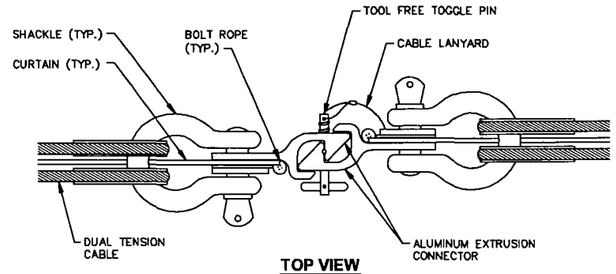
SR-3.1



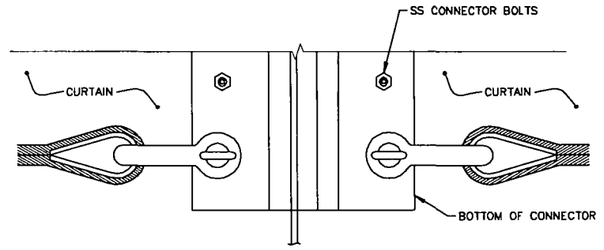
SIDE VIEW **SECTION**

EXAMPLE CENTER TENSION TURBIDITY CURTAIN

NOT TO SCALE



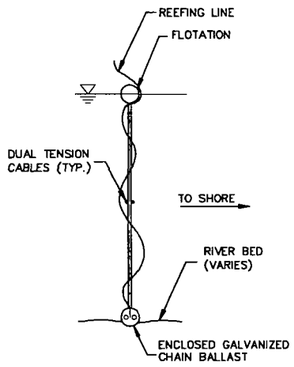
TOP VIEW



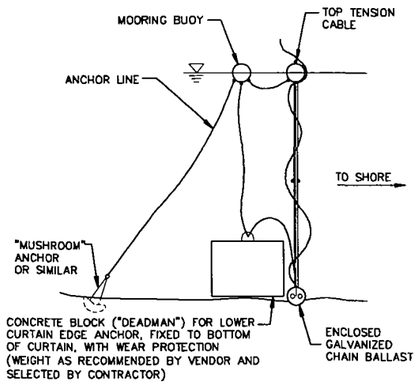
SIDE VIEW

EXAMPLE TURBIDITY CURTAIN LOAD TYPE CONNECTOR

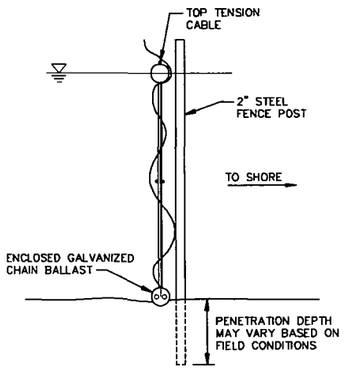
NOT TO SCALE



BASIC



INTERMEDIATE



INTERMEDIATE ALTERNATIVE

EXAMPLE TURBIDITY CURTAIN MOORING SYSTEMS

NOT TO SCALE

GENERAL NOTES:

1. RESUSPENSION CONTROL SYSTEMS SHOWN ARE CONCEPTUAL IN NATURE AND ARE BASED ON RECOMMENDATIONS PROVIDED BY MANUFACTURER.
2. RESUSPENSION SYSTEMS SHOWN MAY BE ADJUSTED IN THE FIELD BY THE CONTRACTOR BASED ON ACTUAL ENCOUNTERED CONDITIONS, UPON APPROVAL FROM THE CONSTRUCTION MANAGER.
3. SUMMARY OF SYSTEMS PRESENTED ON DRAWING SR-3.1.
4. CONSTRUCTION OF TURBIDTY CURTAIN SIMILAR FOR ALL SYSTEMS. SEE SUMMARY PRESENTED ON DRAWING SR-3.1.
5. "BASIC" AND "INTERMEDIATE" SYSTEMS REFER TO ANTICIPATED RANGES OF FLOW AND DEPTH THAT MAY BE ENCOUNTERED DURING WORK. THE CONTRACTOR MAY SELECT ANY SYSTEM OR PARTS OF SYSTEMS IT DEEMS PRUDENT TO MEET TURBIDITY CONTROL PERFORMANCE STANDARDS.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
STEPHEN GARBACIAK JR.		
Professional Engineer's No.		
6201046373		
State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by	Drawn by	Checked by
EJS	AGS	EJS

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESUSPENSION CONTROL SYSTEMS DETAILS

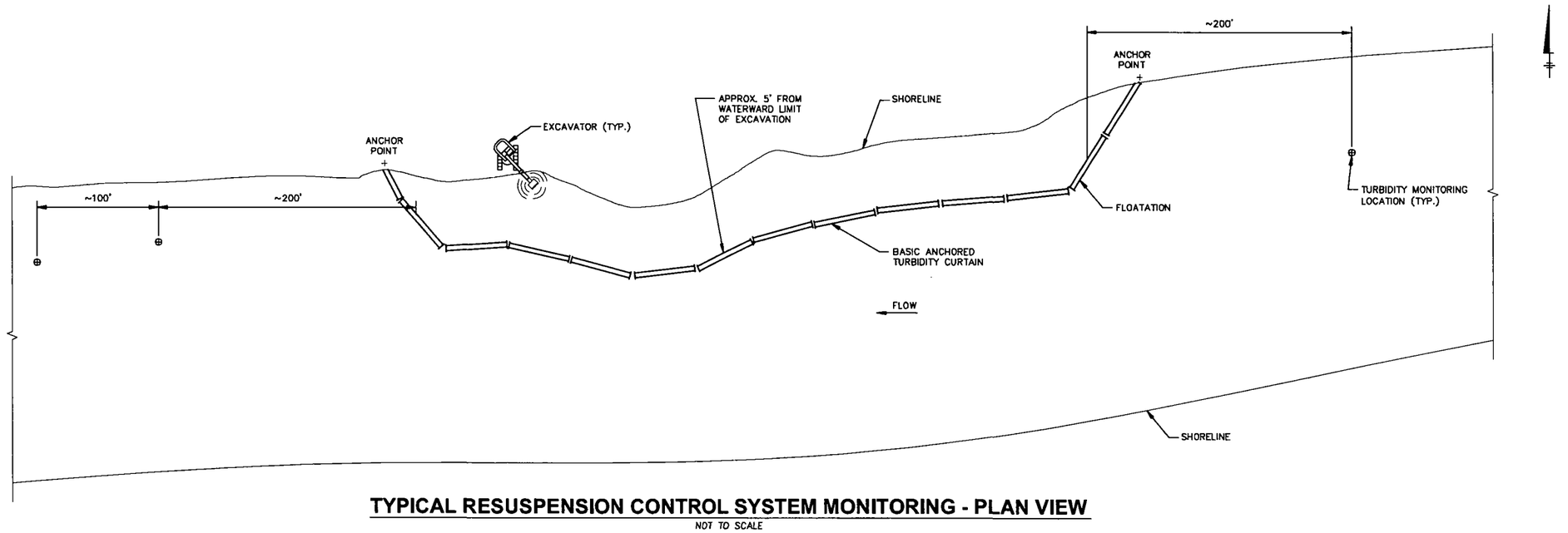
REMOVAL

ARCADIS Project No.
B0064539.0000.00670

Date
JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

SR-3.2



TYPICAL RESUSPENSION CONTROL SYSTEM MONITORING - PLAN VIEW

NOT TO SCALE

LEGEND:

⊕ TURBIDITY MONITORING LOCATIONS

NOTES:

1. RESUSPENSION CONTROL SYSTEMS SHOWN ARE CONCEPTUAL IN NATURE AND ARE BASED ON RECOMMENDATIONS PROVIDED BY MANUFACTURER.
2. PROPOSED MONITORING LOCATIONS ARE APPROXIMATE AND ARE BASED ON EXPECTED FLOW PATH.
3. RESUSPENSION SYSTEMS SHOWN MAY BE REFINED IN THE FIELD BY THE CONTRACTOR BASED ON ACTUAL ENCOUNTERED CONDITIONS, UPON APPROVAL FROM THE ENGINEER.
4. ADDITIONAL INFORMATION REGARDING RESUSPENSION CONTROL SYSTEM MONITORING IS PRESENTED IN SECTION 5 OF THE DESIGN REPORT.

CITY: SYRACUSE DWGROUP: 141/ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYRON=*OFF=*REF*
G:\ENV\CAD\SYRACUSE\ACT\B0064539\0000\0064\01\DWG\CONTRACT\64539SR4.DWG LAYOUT: SR-4_1 SAVED: 7/14/2009 9:13 AM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 7/14/2009 9:13 AM BY: BARNOS, ALEX
XREFS: 64539X00 IMAGES: PROJECTNAME: ---

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.		
Professional Engineer's No.: 5201046373		
State: MICHIGAN	Date Signed:	Project Mgr.: SDG
Designed by: TAS	Drawn by: AGS	Checked by: TAS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

PROPOSED TYPICAL TURBIDITY MONITORING LOCATIONS

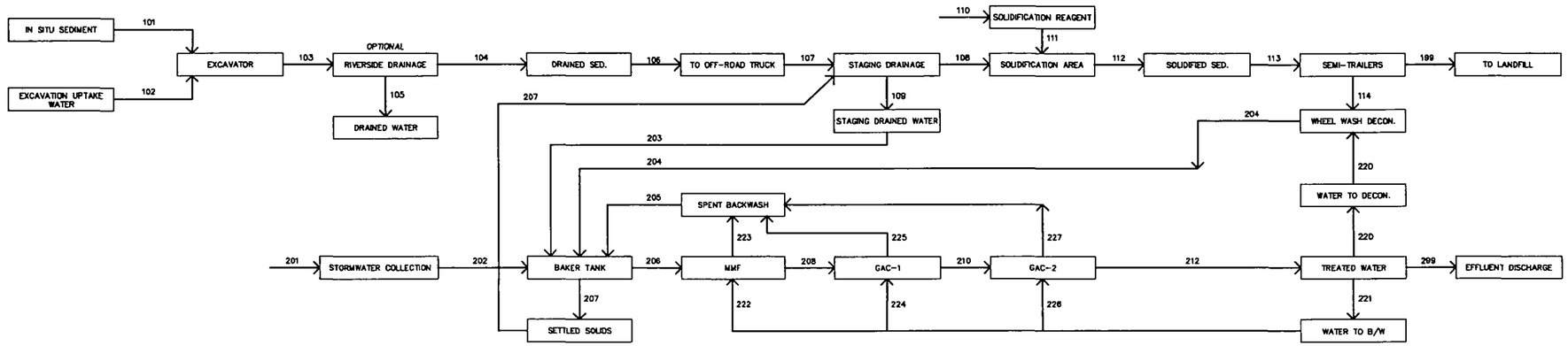
REMOVAL

ARCADIS Project No.: B0064539.0000.00670

Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

SR-4.1



FACILITIES AT STAGING AREAS 1, 2, AND 3																			
STREAM NO.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	199				
DESCRIPTION	IN SITU SED.	EXCAVATION UPTAKE WATER	EXCAVATION SLURRY	RIVERSIDE DRAINED SED.	RIVERSIDE DRAINED WATER	TO OFF-ROAD TRUCK	OFFLOAD TO STAGING	STAGED DRAINED SED.	STAGING DRAINED WATER	SOLIDIF. REAGENT DELIVERY	SOLIDF. REAGENT FEED	SOLIDIFIED SED.	TO SEMI-TRAILER	WHEEL WASH DECON.	TO LF				
TOT. MASS (WET T/D)	644	105	749	644	105	644	644	655				655	655	0.0655	655				
SOLIDS MASS (DRY T/D)	389		389	389	0.389	389	389	389				389	389	0.0389	389				
SOLIDS (% W/W)	60.5		52	60.4	0.369	60.4	60.4	59.4				59.4	59.4	59.4	59.4				
OPERATING FLOW (GPM)	70.1	17.5	87.7	70.2	17.5	70.2	70.2	72				72	72	0.0072	72				
STREAM NO.	201	202	203	204	205	206	207	208	210	212	220	221	222	223	224	225	226	227	299
DESCRIPTION	STORMWATER COLLECTION	STORMWATER TO TREAT	STAGING PUMPED WATER	WATER FROM DECON.	COMBINED SPENT B/W	SETTL. TANK O/F	SETTLED SOLIDS	MMF EFFL.	GAC-1 EFFL.	GAC-2 EFFL.	WATER TO DECON.	TOTAL B/W FEED	MMF B/W FEED	MMF SPENT B/W	GAC-1 B/W FEED	GAC-1 SPENT B/W	GAC-2 B/W FEED	GAC-2 SPENT B/W	EFFLUENT DISCHARGE
TOT. MASS (WET T/D)	72.1	72.1		24.1	15	100	11.2	100	100	100	24	15	5	6.02	4.5	4.5	4.5	4.5	61
SOLIDS MASS (DRY T/D)	0.0144	0.0144		0.0389	0.0228	0.0229	0.0533	0.00229	0.000229	0.000023	0.000003	0.000002	0.000001	0.0205	0.000001	0.00206	0.000001	0.000206	0.000007
SOLIDS (% W/W)	0.02	0.02		0.162	0.152	0.0228	0.477	0.00228	0.000228	0.000023	0.000011	0.000011	0.000011	0.342	0.000011	0.0457	0.000011	0.00456	0.000011
OPERATING FLOW (GPM)	12	12		4	2.5	16.7	1.85	16.6	16.6	16.6	3.89	2.5	0.899	1	0.749	0.749	0.749	0.749	10.2

NOTES:

1. SEE DESIGN REPORT FOR DESCRIPTION OF DESIGN BASIS.
2. 101 = STREAM NUMBER
3. B/W = BACKWASH
4. MMF = MULTI-MEDIA FILTER
5. GAC = GRANULAR ACTIVATED CARBON
6. T/D = TONS PER DAY
7. % W/W = PERCENT BY WEIGHT
8. GPM = GALLONS PER MINUTE
9. DECON. = DECONTAMINATION
10. LF = LANDFILL
11. O/F = OVERFLOW
12. SED. = SEDIMENT
13. SOLIDIF. = SOLIDIFICATION
14. EFFL. = EFFLUENT

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by: SRG	Drawn by: AGS	Checked by: SRG

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

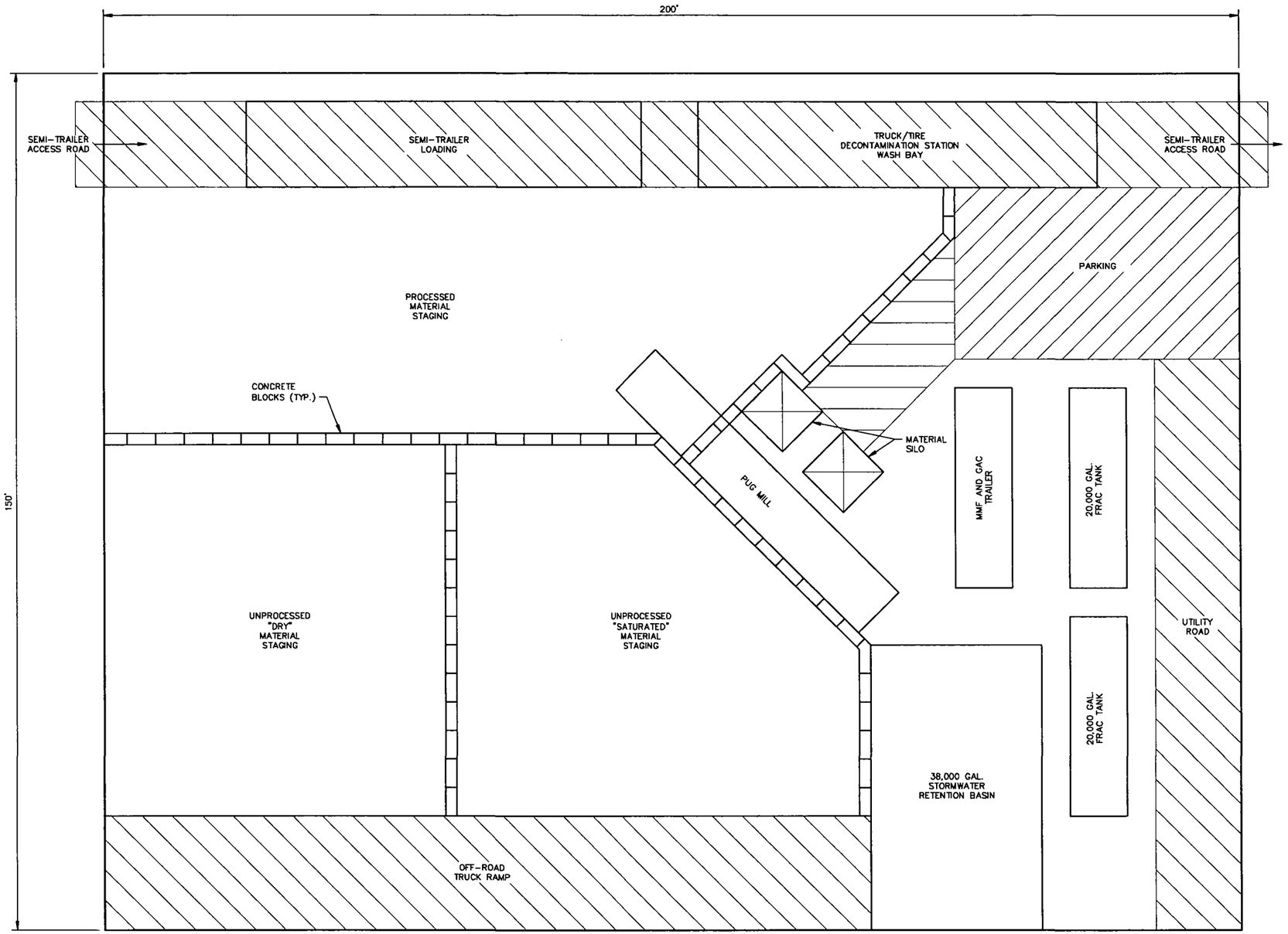
SEDIMENT DRAINAGE AND WATER TREATMENT PROCESS FLOW DIAGRAM

MATERIAL STAGING/PROCESSING

ARCADIS Project No.: B0065439.0000.00670
Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL 312.332.4937

P-1.1



IMPACTED MATERIALS STAGING AND PROCESSING LAYOUT - TYPICAL

0 10' 20'

SCALE: 1"=10'

NOTES:

1. MMF = MULTI-MEDIA FILTER.
2. GAC = GRANULAR ACTIVATED CARBON.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Chd

Professional Engineer's Name: STEPHEN GARBACIAK JR.		
Professional Engineer's No.: 6201046373		
State: MICHIGAN	Date Signed:	Project Mgr.: SDG
Designed by: SRG	Drawn by: AGS	Checked by: SRG

ARCADIS

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KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

IMPACTED MATERIALS STAGING AND PROCESSING DETAILS

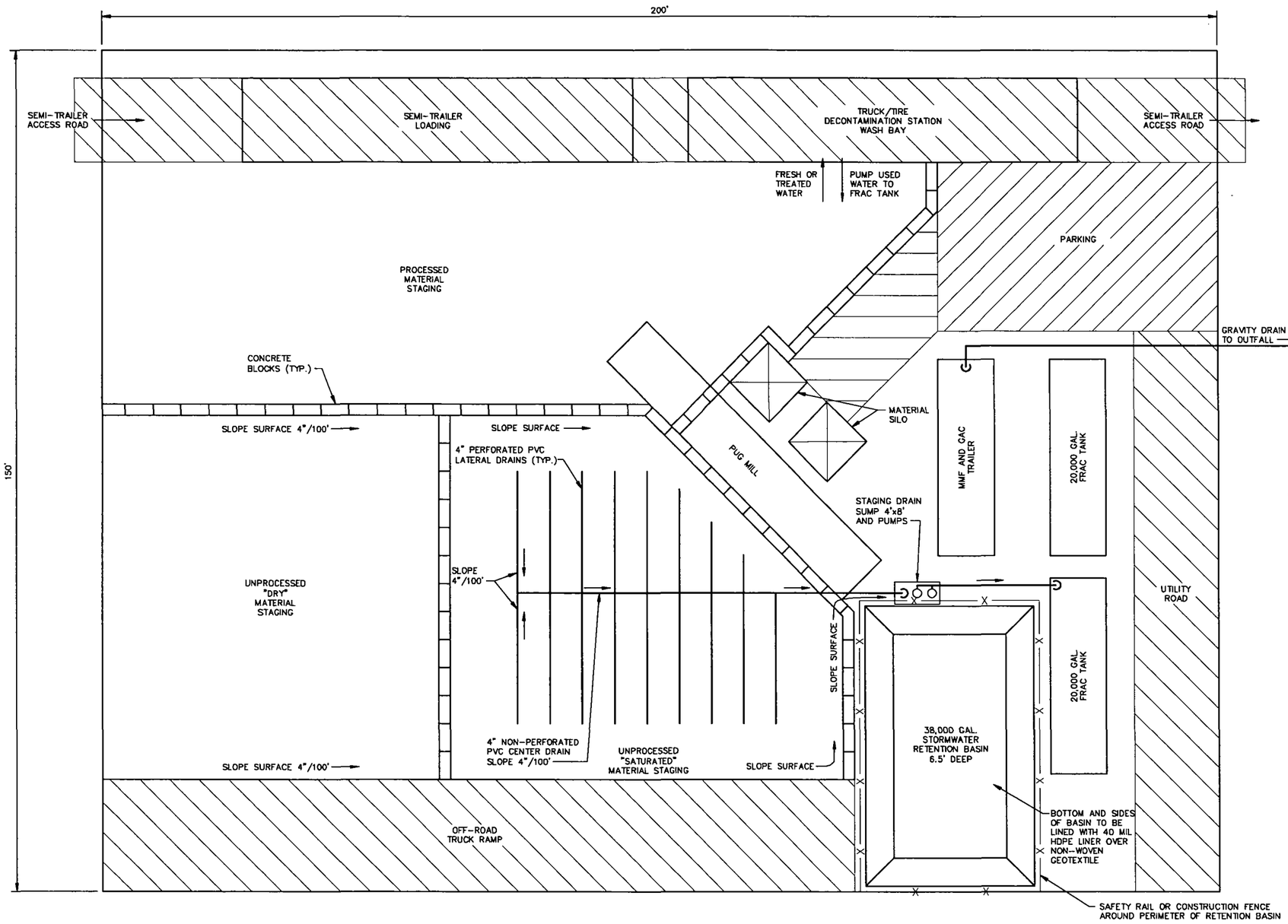
MATERIAL STAGING/PROCESSING

ARCADIS Project No.
B0064539.0000.00670

Date
JULY 2009

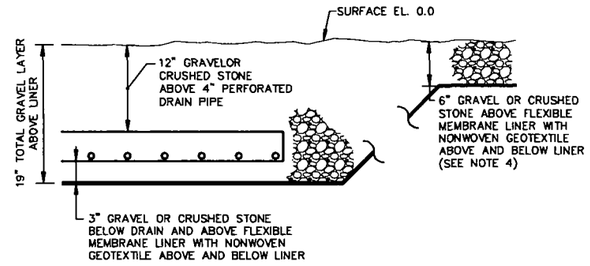
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

P-2.1



TYPICAL STAGING AREA PROCESSING FACILITIES
PIPING & DRAINAGE

0 10' 20'
SCALE: 1"=10'



"SATURATED" MATERIAL STAGING AREAS | ALL OTHER TRAFFIC AREAS

TYPICAL SECTIONS
STAGING AND TRAFFIC AREAS

NOT TO SCALE

NOTES:

1. ALL PRESSURE PIPELINES SHOWN ARE 1-1/2 OR 2 INCH PVC OR FLEXIBLE PIPING.
2. INTERNAL PIPING FOR MMF AND GAC TRAILERS TO BE DETERMINED BY CONTRACTOR AND VENDOR.
3. ALL 4-INCH PERFORATED AND NON-PERFORATED PIPING SHALL BE SCHEDULE 40 OR CORRUGATED HDPE FLEXIBLE PIPING, UNLESS OTHERWISE NOTED.
4. FLEXIBLE MEMBRANE LINERS SHOWN SHALL BE 40 MIL HDPE. NON-WOVEN GEOTEXTILE SHALL BE MIRAFI 1120N, OR EQUAL.
5. THIS DRAWING WAS PREPARED FOR STAGING AREA 1. LAYOUTS AND PLACEMENT OF COMPONENTS WILL BE SIMILAR AT STAGING AREAS 2 AND 3.
6. POWER TO OPERATE PUMPS AND OTHER DEVICES AT THE STAGING AREA IS TO BE PROVIDED BY A PORTABLE ELECTRIC GENERATOR TO BE PROVIDED BY CONTRACTOR.
7. THE BACKWASH WATER TANK WILL BE FILLED WITH RIVER WATER, AS NEEDED, TO PROVIDE WATER FOR DECONTAMINATION.
8. MMF = MULTI-MEDIA FILTER
9. GAC = GRANULAR ACTIVATED CARBON
10. EL. = ELEVATION

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE.

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: SRG | Drawn by: AGS | Checked by: SRG

ARCADIS U.S., INC.

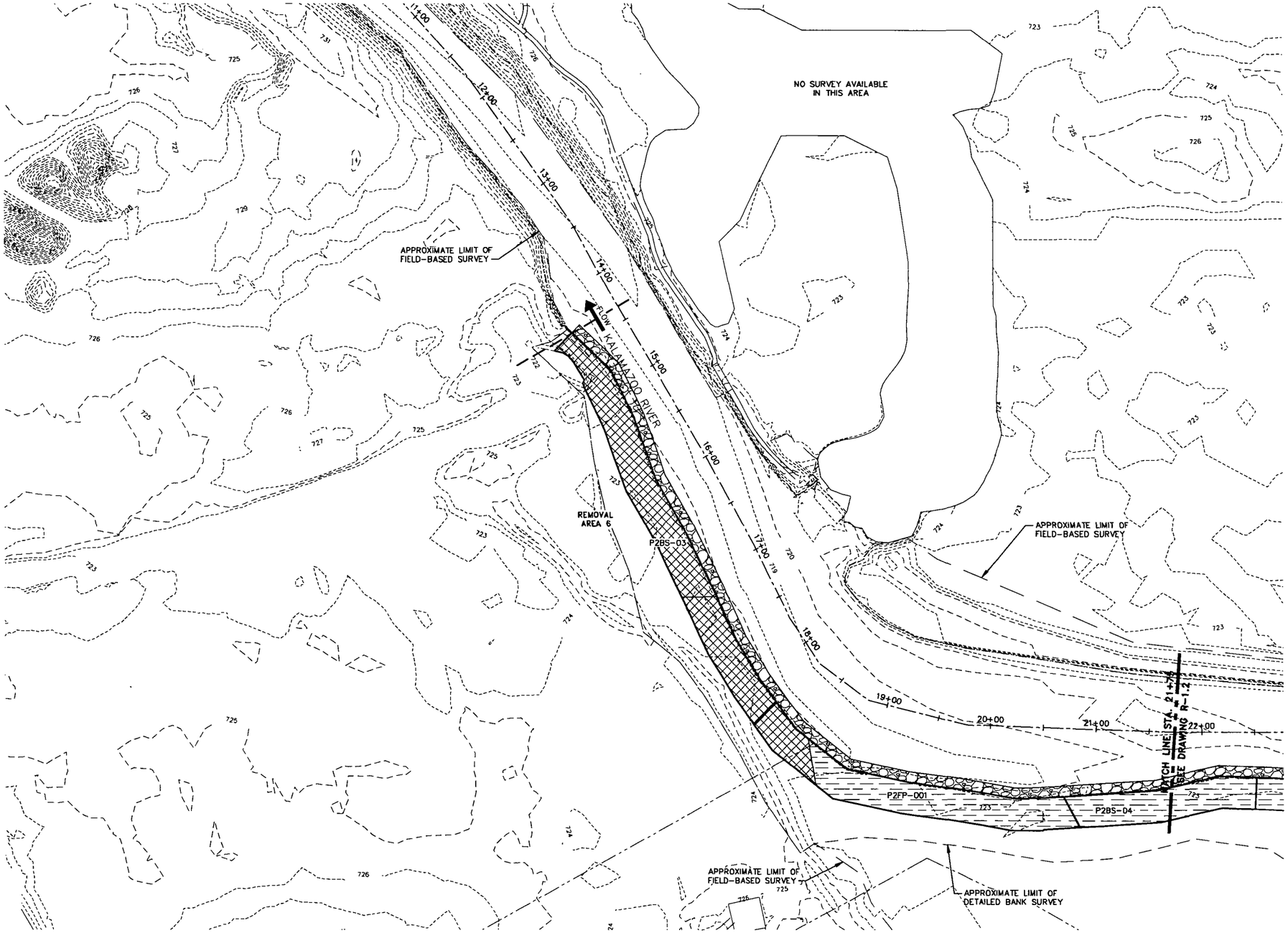
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

PROCESSING AREA - FACILITY DETAILS

MATERIAL STAGING/PROCESSING

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009
ARCADIS, 30 W. MONROE ST. SUITE 1710, CHICAGO, IL 60648-2404, TEL. 312.332.4937

P-3.1



WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
6	FORESTED WETLAND	0.6	45	135

● 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2BS-04	TYPE D (STA. 14+50 TO 17+50)
P2BS-04	TYPE E (STA. 17+50 TO 18+25)
P2FP-001	TYPE E (STA. 18+25 TO 19+00)
P2FP-001	TYPE D (STA. 19+00 TO 20+50)
P2BS-03	TYPE D

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS.

LEGEND:

- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.

1"=50' (50' 0 50' 100')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name	STEPHEN GARBACIAK JR.	
Professional Engineer's No.	6201046373	
State: MICHIGAN	Date Signed	Project Mgr.: SDG
Designed by: ANE	Drawn by: AGS	Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION PLAN (11+25 TO 21+75)

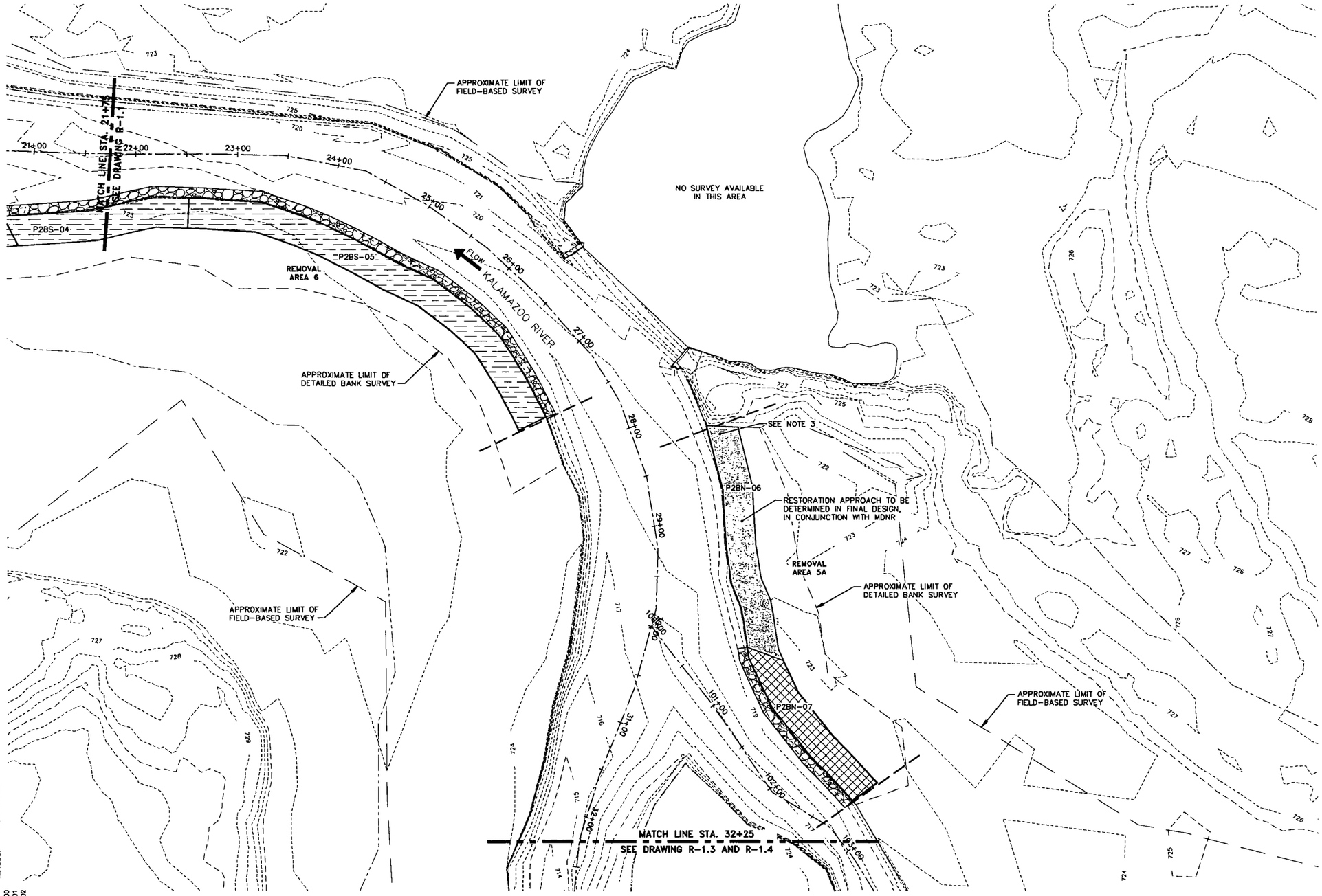
BANK AND FLOODPLAIN RESTORATION

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

ARCADIS Project No.: B0064539.0000.00670

Date: JULY 2009

R-1.1



WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
5A	FORESTED WETLAND	0.2	15	45
6	FORESTED WETLAND	0.6	45	135

● 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2BN-07	TYPE B
P2BN-06	TYPE B
P2BS-05	TYPE D
P2BS-04	TYPE D

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS.

LEGEND:

- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.

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XREFS: 64539X00 64539X01 64539X02
IMAGES:
PROJECTNAME: ---

1"=50' (50' 0 50' 100')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

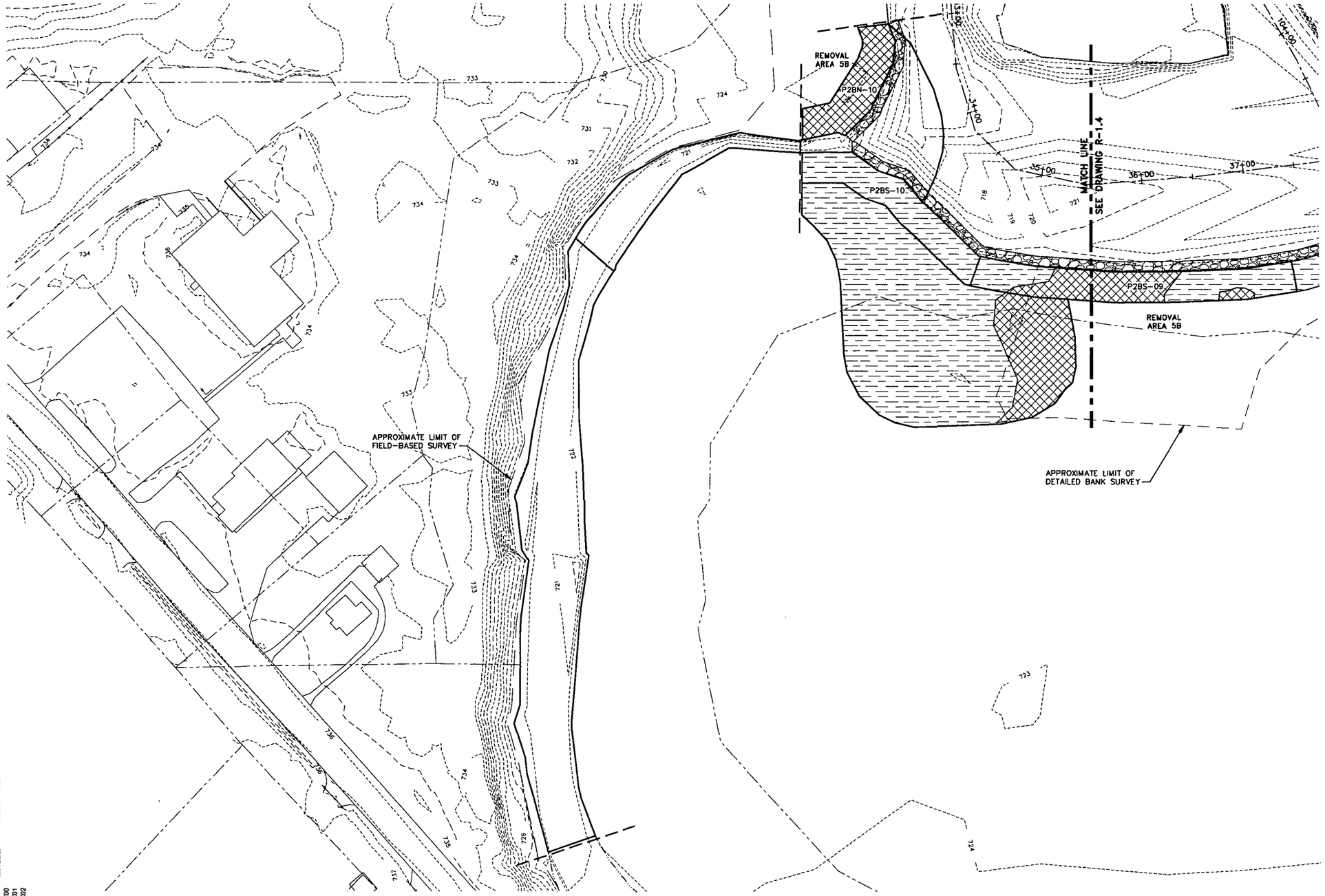
KALAMAZOO RIVER STUDY GROUP ● ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION PLAN (21+75 TO 32+25)

GENERAL

ARCADIS Project No. B0064539.0000.00670
Date JULY 2009
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

R-1.2



WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
5B	FORESTED WETLAND	0.9	68	203

● 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2BS-09	TYPE B
P2BS-10	TYPE B
P2BN-10	TYPE B

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS.

LEGEND:

- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.
3. NO RESTORATION EFFORTS ARE PLANNED IN THE OXBOW AREA OF REMOVAL.

CITY: SYRACUSE DWGROUP: 141ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYRON=*OFF*;*REF*
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XREFS: 64539X00 64539X01 64539X02 IMAGES: PROJECTNAME: ---

1"=50' (50' 0 50' 100')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.		
Professional Engineer's No.: 5201046373		
State: MICHIGAN	Date Signed:	Project Mgr.: SDG
Designed by: ANE	Drawn by: AGS	Checked by: DA

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION PLAN (OXBOW)

BANK AND FLOODPLAIN RESTORATION

ARCADIS Project No.: B0064539.0000.00670

Date: JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

R-1.3

WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
4A	FORESTED WETLAND	0.7	53	158
4B	FORESTED WETLAND	0.9	68	203
5B	FORESTED WETLAND	0.9	68	203

❶ 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2FP-025	TYPE C
P2BN-20	TYPE B
P2BS-22	TYPE B
P2BS-21	TYPE B
P2BS-20	TYPE A
P2BS-19	TYPE D
P2BS-09	TYPE B
P2BS-10	TYPE B
P2BN-10	TYPE B

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS.

LEGEND:

- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.

1"=50' (50' 0 50' 100')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed | Project Mgr.: SDG
Designed by: ANE | Drawn by: AGS | Checked by: DA

ARCADIS
ARCADIS U.S., INC.

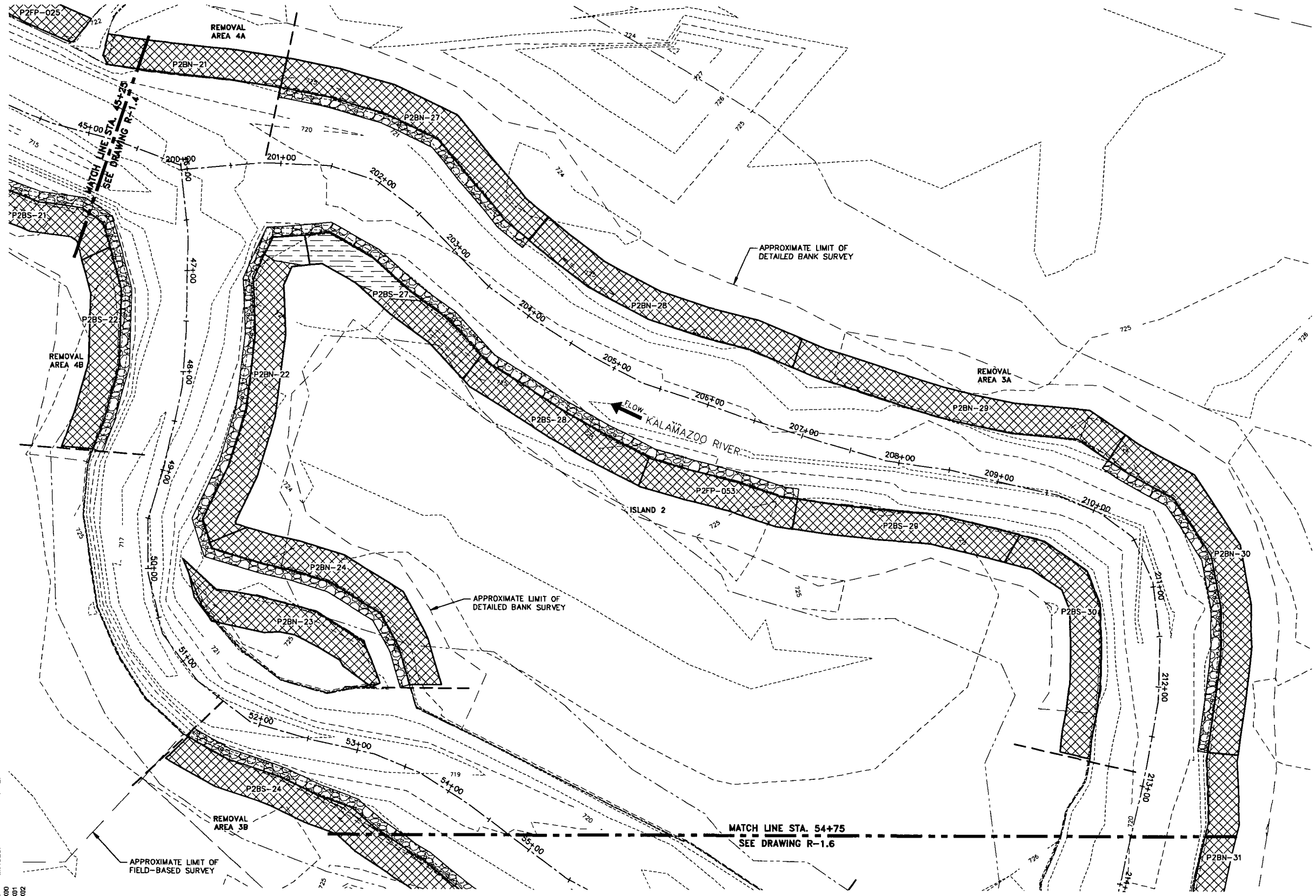
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION PLAN (32+25 TO 45+25)

BANK AND FLOODPLAIN RESTORATION

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60603-2404
TEL. 312.332.4937

R-1.4



WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
3A	FORESTED WETLAND	1.9	143	428
3B	FORESTED WETLAND	0.5	38	113
4A	FORESTED WETLAND	0.7	53	158
4B	FORESTED WETLAND	0.9	68	203
ISLAND 2	FORESTED WETLAND	2.5	188	563

@ 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2BN-31	TYPE A
P2BN-30	TYPE B
P2BN-29	TYPE A
P2BN-28	TYPE A
P2BN-27	TYPE B
P2BN-21	TYPE C
P2FP-025	TYPE C
P2BS-30	TYPE A
P2BS-29	TYPE A
P2FP-053	TYPE B
P2BS-28	TYPE B
P2BS-27	TYPE B
P2BN-24	TYPE B
P2BN-23	TYPE A
P2BN-22	TYPE D
P2BS-24	TYPE B
P2BS-22	TYPE B
P2BS-21	TYPE B

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS.

LEGEND:

- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.

CITY: SYRACUSE DIV/GROUP: 141/ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYR:ON=*;OFF=*REF*
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IMAGES: PROJECTNAME: ---
XREFS: 64539X00 64539X01 64539X02

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Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by	Drawn by	Checked by
ANE	AGS	DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION PLAN (45+25 TO 54+75)

BANK AND FLOODPLAIN RESTORATION

ARCADIS Project No. B0064539.0000.00670
Date JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

R-1.5

XREFS: 64539X00 64539X01 64539X02
IMAGES:
PROJECTNAME: ---

MATCH LINE STA. 54+75
SEE DRAWING R-1.5

P2BS-24
P2BS-25
P2BN-26
P2BN-31
P2BN-32
P2BN-33
P2BN-34
ISLAND 2
REMOVAL AREA 3B
REMOVAL AREA 3A
REMOVAL AREA 2
APPROXIMATE LIMIT OF DETAILED BANK SURVEY
APPROXIMATE LIMIT OF FIELD-BASED SURVEY
FLOW
KALAMAZOO RIVER
MATCH LINE STA. 67+25
SEE DRAWING R-1.7

WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
2	FORESTED WETLAND	1.0	75	225
3A	FORESTED WETLAND	1.9	143	428
3B	FORESTED WETLAND	0.5	38	113
3B	UPLAND FOREST	0.4	30	90
ISLAND 2	FORESTED WETLAND	2.5	188	563

● 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2BN-34	TYPE D
P2BN-33	TYPE D
P2BN-32	TYPE C
P2BN-31	TYPE A
P2BN-26	TYPE D
P2BS-25	TYPE B
P2BS-24	TYPE B

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS.

LEGEND:
- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:
1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.

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Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by: ANE	Drawn by: AGS	Checked by: DA

ARCADIS
ARCADIS U.S., INC.

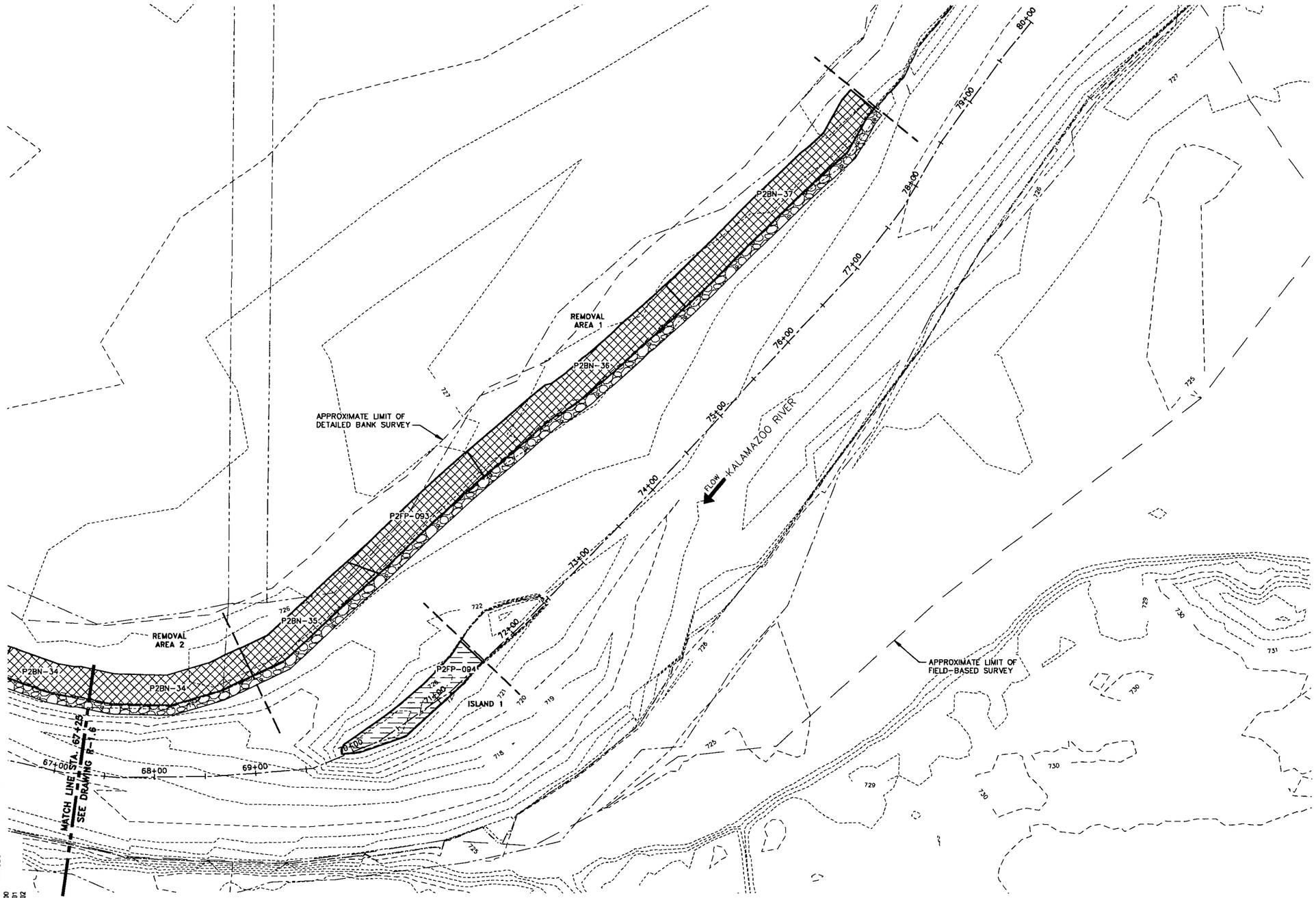
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION PLAN (54+75 TO 67+25)

BANK AND FLOODPLAIN RESTORATION

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

R-1.6



WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
1	FORESTED WETLAND	1.1	83	248
2	FORESTED WETLAND	1.0	75	225

● 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2BN-37	TYPE E
P2BN-36	TYPE E
P2FP-094	NO RESTORATION
P2FP-093	TYPE E
P2BN-35	TYPE D
P2BN-34	TYPE D

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS.

LEGEND:

- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.
3. NO RESTORATION EFFORTS ARE PLANNED IN THE ISLAND 1 AREA OF REMOVAL.

1"=50' (50' 0 50' 100')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed | Project Mgr.: SDG
Designed by: ANE | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

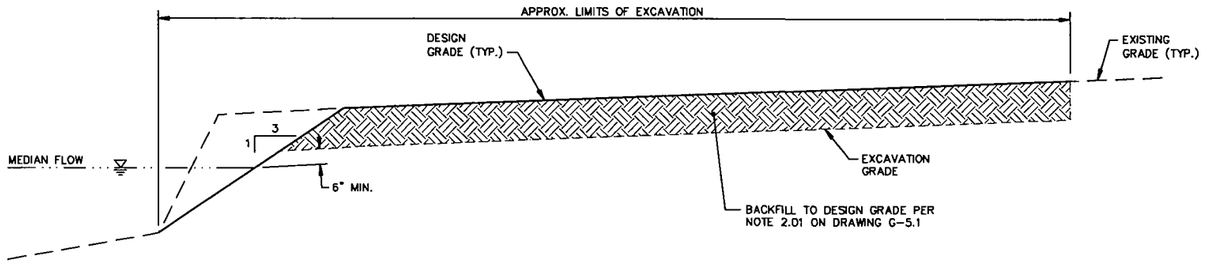
RESTORATION PLAN (67+25 TO 80+00)

BANK AND FLOODPLAIN RESTORATION

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009

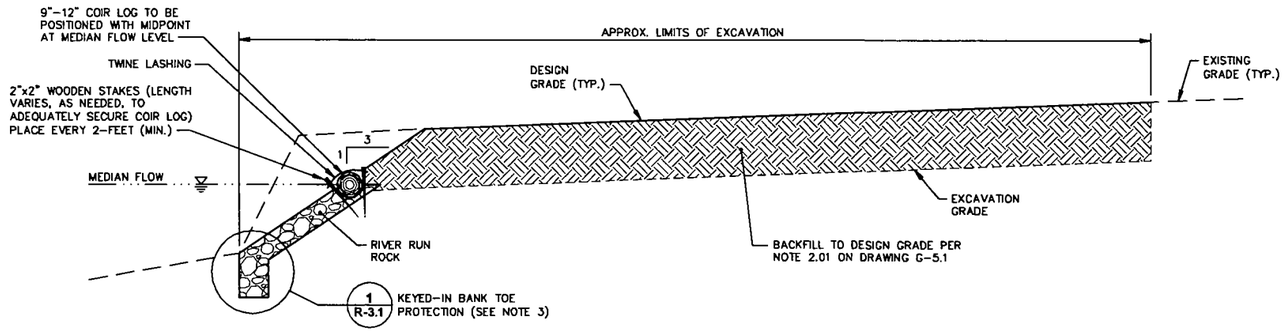
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60648-2404
TEL. 312.332.4937

R-1.7



TYPICAL RESTORATION SECTION - TYPE A

NOT TO SCALE
(2X VERTICAL EXAGGERATION)



TYPICAL RESTORATION SECTION - TYPE B

NOT TO SCALE
(2X VERTICAL EXAGGERATION)

NOTES:

1. SEE DRAWINGS G-5.1 AND G-5.2 FOR RESTORATION MATERIALS AND PLANTING SPECIFICATIONS.
2. REFER TO RESTORATION DRAWINGS R-1.1 THROUGH R-1.7 FOR RESTORATION REQUIREMENTS.
3. KEYED-IN TOE MAY BE ELIMINATED AT LOCATIONS WHERE EXISTING RIVER BED CONSISTS OF DENSE SANDS, GRAVELS, AND/OR COBBLES. CONDITIONS TO BE EVALUATED IN FIELD AT TIME OF EXCAVATION.

CITY: SYRACUSE DIV/GROUP: 141/ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYR:ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVE\00645390\0006400\DWG\CONTRACT\645392R2.DWG LAYOUT: R-2_1 SAVED: 7/15/2009 12:23 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 7/15/2009 12:23 PM BY: SAMIOS, ALEX
XREFS: 645393000 IMAGES: PROJECTNAME: ---

SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd

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Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: | Project Mgr.: SDG
Designed by: DA | Drawn by: AGS | Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

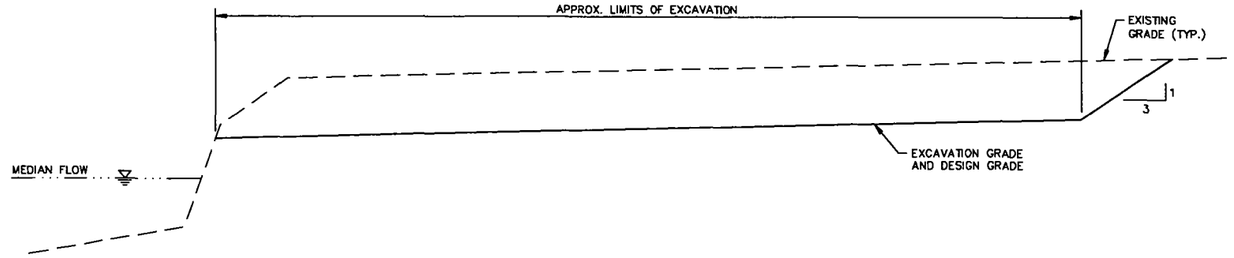
TYPICAL RESTORATION SECTIONS

BANK RESTORATION

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009

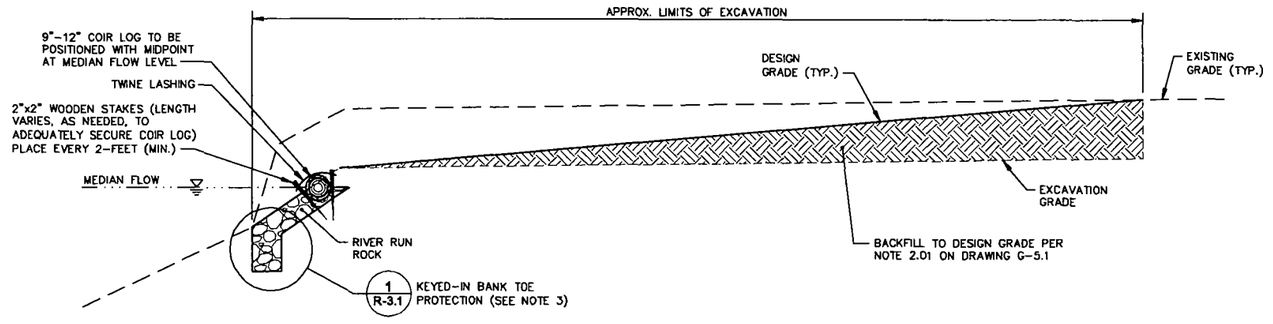
ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL 312.332.4937

R-2.1



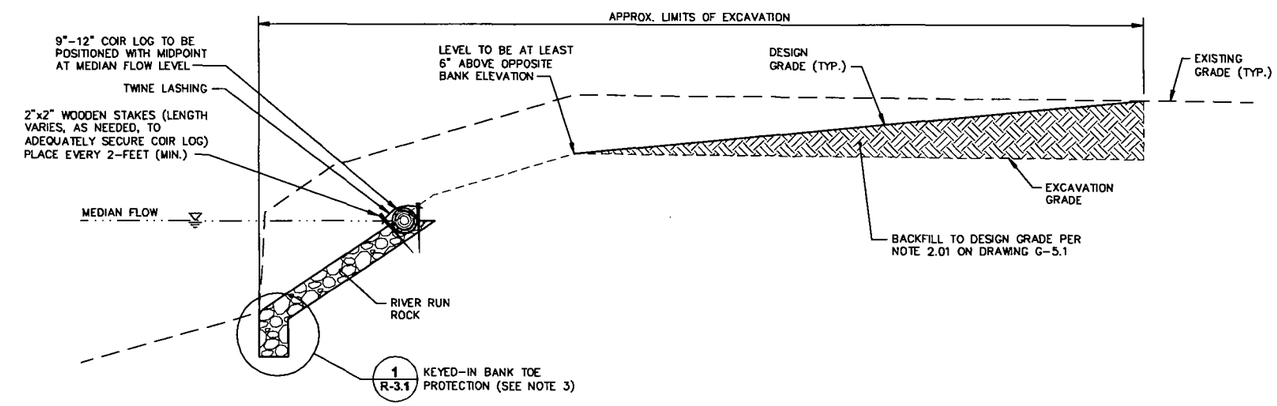
TYPICAL RESTORATION SECTION - TYPE C

NOT TO SCALE
(2X VERTICAL EXAGGERATION)



TYPICAL RESTORATION SECTION - TYPE D

NOT TO SCALE
(2X VERTICAL EXAGGERATION)



TYPICAL RESTORATION SECTION - TYPE E

NOT TO SCALE
(2X VERTICAL EXAGGERATION)

NOTES:

1. SEE DRAWINGS G-5.1 AND G-5.2 FOR RESTORATION MATERIALS AND PLANTING SPECIFICATIONS.
2. REFER TO RESTORATION DRAWINGS R-1.1 THROUGH R-1.7 FOR RESTORATION REQUIREMENTS.
3. KEYED-IN TOE MAY BE ELIMINATED AT LOCATIONS WHERE EXISTING RIVER BED CONSISTS OF DENSE SANDS, GRAVELS, AND/OR COBBLES. CONDITIONS TO BE EVALUATED IN FIELD AT TIME OF EXCAVATION.

CITY: SYRACUSE DIV/GROUP: 141/ENV DB: AGS LD: AGS PIC: PM: SDG TM: LYR:ON=*;OFF=*REF*
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XREFS: 64539X00 IMAGES: PROJECTNAME: ---

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING; USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN
Date Signed:
Project Mgr.: SDG
Designed by: DA
Drawn by: AGS
Checked by: DA

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

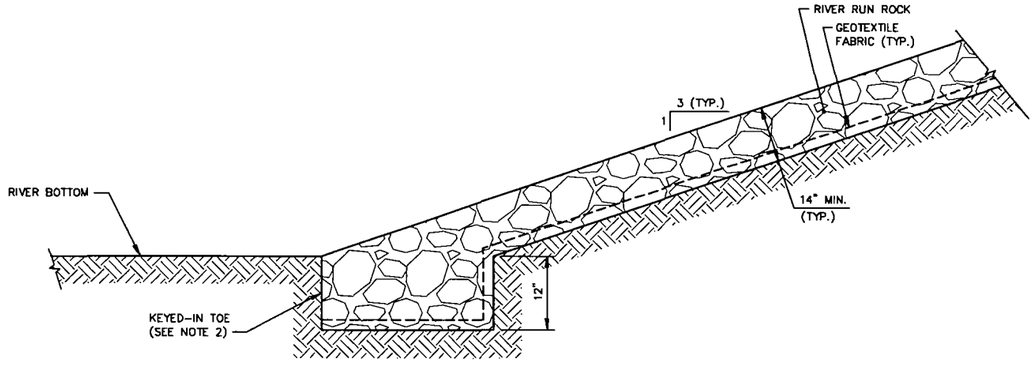
TYPICAL RESTORATION SECTIONS

BANK RESTORATION

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009

R-2.2



NOTES:

1. SEE DRAWING G-5.1 FOR MATERIAL SPECIFICATIONS.
2. KEYED-IN TOE MAY BE ELIMINATED AT LOCATIONS WHERE EXISTING RIVER BED CONSISTS OF DENSE SANDS, GRAVELS, AND/OR COBBLES. CONDITIONS TO BE EVALUATED IN FIELD AT TIME OF EXCAVATION.

KEYED-IN BANK TOE PROTECTION (1)

NOT TO SCALE

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XREFS: 64539X00 IMAGES: PROJECTNAME: ---

SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
STEPHEN GARBACIAK JR.		
Professional Engineer's No.		
6201046373		
State	Date Signed	Project Mgr.
MICHIGAN		SDG
Designed by	Drawn by	Checked by
ANE	AGS	ANE

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION DETAILS

BANK RESTORATION

ARCADIS Project No.
B0064539.0000.00670

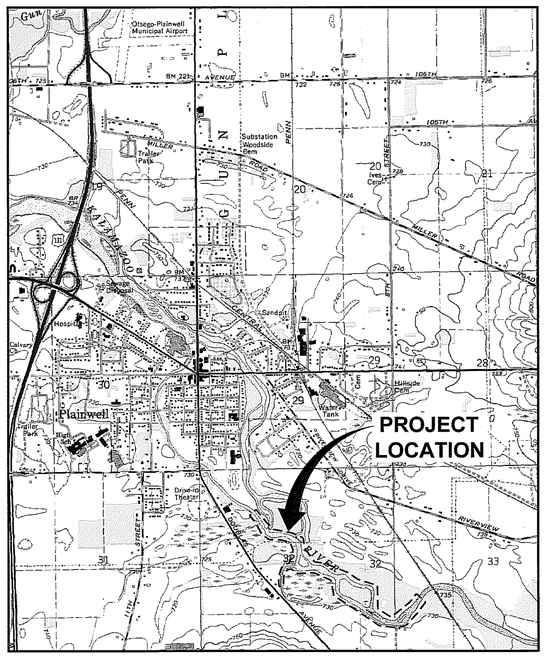
Date
JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

R-3.1

CONTRACT DRAWINGS

PLAINWELL NO. 2 DAM AREA TIME-CRITICAL REMOVAL ACTION FINAL DESIGN REPORT



REFERENCE: USGS QUADS., 7.5 MIN. SERIES, DRG TOPOGRAPHIC MAP
ALLEGAN COUNTY, KALAMAZOO MICHIGAN.

LOCATION MAP

0 2000' 4000'

GRAPHIC SCALE

ALLIED PAPER, INC./PORTAGE CREEK/ KALAMAZOO RIVER SUPERFUND SITE

DATE ISSUED
JULY 2009

DATE REVISED
08/28/09

KALAMAZOO RIVER STUDY GROUP

ARCADIS

ARCADIS U.S., INC.

GENERAL

DRAWING NO.	REVISED	DESCRIPTION
G–1.1		INDEX OF DRAWINGS
G–1.2		PLAN VIEW INDEX
G–2.1		EXISTING SITE PLAN
G–3.1		ACCESS ROUTE AND DIRECTIONS TO C & C LANDFILL
G–3.2		ACCESS ROUTE AND DIRECTIONS TO OTTAWA COUNTY FARMS LANDFILL
G–4.1		PROPOSED WORK LIMITS
G–5.1		GENERAL NOTES AND SPECIFICATIONS
G–5.2		GENERAL NOTES AND SPECIFICATIONS

EROSION AND SEDIMENT CONTROL (E&SC) AND SITE PREPARATION

DRAWING NO.	REVISED	DESCRIPTION
ES–1.1		EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION PLAN
ES–2.1		EROSION & SEDIMENT CONTROL (E&SC) AND SITE PREPARATION DETAILS

REMOVAL

DRAWING NO.	REVISED	DESCRIPTION
SR–1.1		REMOVAL PLAN (11+25 TO 21+75)
SR–1.2	8/28/09	REMOVAL PLAN (21+75 TO 32+25)
SR–1.3		REMOVAL PLAN (OXBOW)
SR–1.4	8/28/09	REMOVAL PLAN (32+25 TO 45+25)
SR–1.5		REMOVAL PLAN (45+25 TO 54+75)
SR–1.6		REMOVAL PLAN (54+75 TO 67+25)
SR–1.7		REMOVAL PLAN (67+25 TO 80+00)
SR–2.1		TYPICAL REMOVAL SECTIONS
SR–2.2		TYPICAL REMOVAL SECTIONS
SR–3.1		RESUSPENSION CONTROL SYSTEMS
SR–3.2		RESUSPENSION CONTROL SYSTEMS DETAILS
SR–4.1		PROPOSED TYPICAL TURBIDITY MONITORING LOCATIONS

MATERIAL STAGING/PROCESSING

DRAWING NO.	REVISED	DESCRIPTION
P–1.1		SEDIMENT DRAINAGE AND WATER TREATMENT PROCESS FLOW DIAGRAM
P–2.1		IMPACTED MATERIALS STAGING AND PROCESSING DETAILS
P–3.1		PROCESSING AREA – FACILITY DETAILS

BANK RESTORATION

DRAWING NO.	REVISED	DESCRIPTION
R–1.1		RESTORATION PLAN (11+25 TO 21+75)
R–1.2		RESTORATION PLAN (21+75 TO 32+25)
R–1.3		RESTORATION PLAN (OXBOW)
R–1.4		RESTORATION PLAN (32+25 TO 45+25)
R–1.5	8/28/09	RESTORATION PLAN (45+25 TO 54+75)
R–1.6		RESTORATION PLAN (54+75 TO 67+25)
R–1.7		RESTORATION PLAN (67+25 TO 80+00)
R–2.1	8/28/09	TYPICAL RESTORATION SECTIONS
R–2.2		TYPICAL RESTORATION SECTIONS
R–3.1		RESTORATION DETAILS

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
1	08/28/09	MODIFIED DRAWING INDEX	AGS	TAS

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN	08/12/09	SDG
Designed by	Drawn by	Checked by
DA	AGS	DA

STATE OF MICHIGAN – STEPHEN GARBACIAK JR. – ENGINEER – No. 6201046373 – LICENSED PROFESSIONAL ENGINEER

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

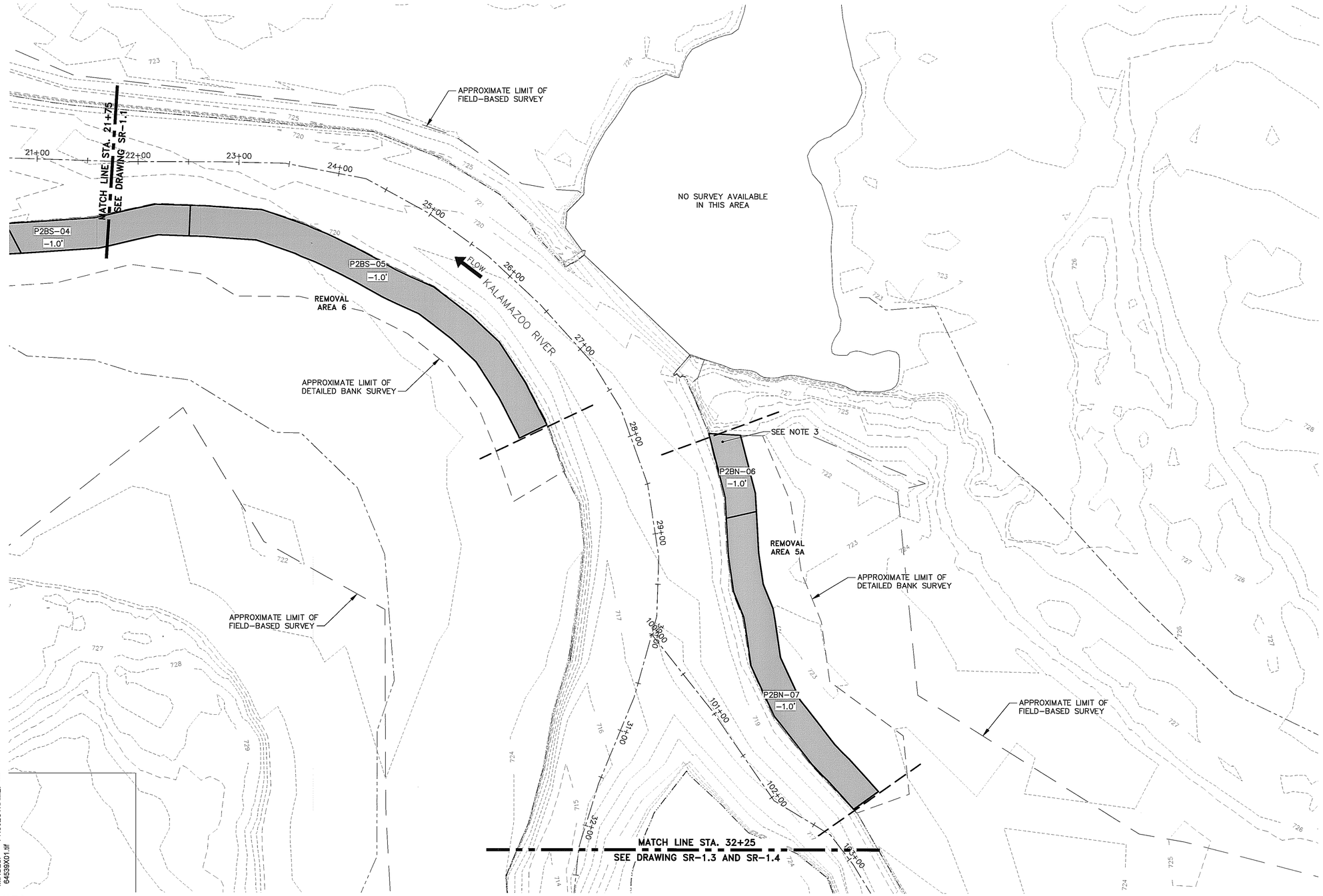
INDEX OF DRAWINGS

GENERAL

ARCADIS Project No. B0064539.0000.00670
Date JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

G-1.1



REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
~~P2BN-07~~	~~TYPE A~~
P2BN-06	TYPE A
~~P2BS-05~~	~~TYPE A~~
P2BS-04	TYPE A

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

LEGEND:

- 710 — EXISTING INDEX CONTOUR
- 711 — EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

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SAMIOS, ALEX

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IMAGES: 64539X01.tif
PROJECTNAME: ---

1"=50' (50' 0 50' 100')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
1	08/28/09	MODIFIED REMOVAL TABLE	AGS	TAS

Professional Engineer's Name: **STEPHEN GARBACIAK JR.**
Professional Engineer's No.: 6201046373

State	Date Signed	Project Mgr.
MICHIGAN	08/12/09	SDG
Designed by	Drawn by	Checked by
DA	AGS	DA

STATE OF MICHIGAN — STEPHEN GARBACIAK JR. — ENGINEER — No. 6373 — PROFESSIONAL ENGINEER

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (21+75 TO 32+25)

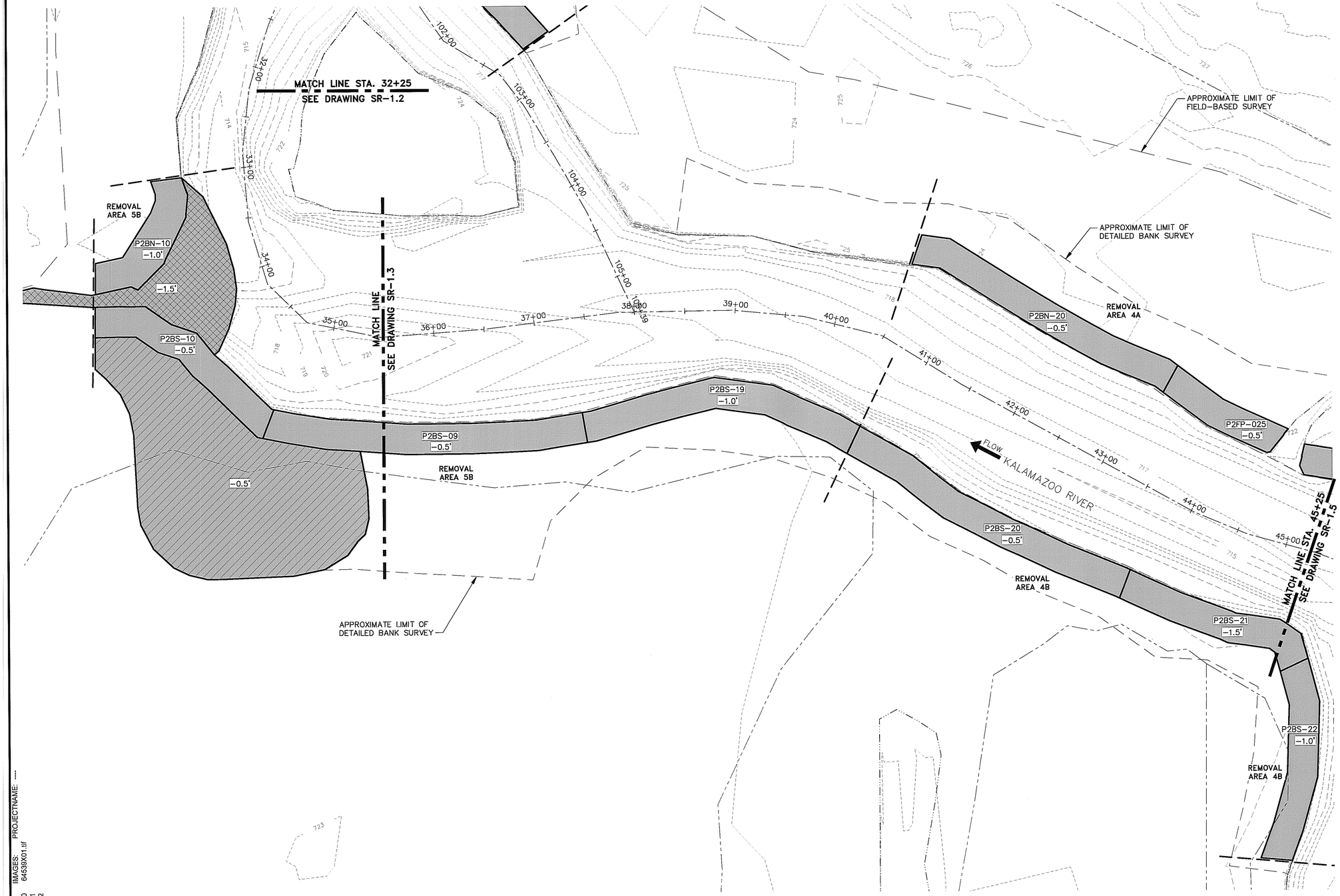
GENERAL

ARCADIS Project No.
B0064539.0000.00670

Date
JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

SR-1.2



REMOVAL TABLE	
REMOVAL CELL	TYPICAL REMOVAL SECTION
P2FP-025	TYPE B
P2BN-20	TYPE A
~~P2BS-22~~	~~TYPE A~~
P2BS-21	TYPE A
~~P2BS-20~~	~~TYPE B~~
P2BS-19	TYPE A
P2BS-09	TYPE A*
P2BS-10	TYPE A*
P2BN-10	TYPE A*

1

SEE DRAWING SR-2.1 FOR TYPICAL REMOVAL SECTIONS.

* PORTIONS OF REMOVAL CELL INCLUDE ADDITIONAL FLOODPLAIN SOIL REMOVAL AND/OR SEDIMENT REMOVAL.

LEGEND:

- 710 EXISTING INDEX CONTOUR
- 711 EXISTING INTERMEDIATE CONTOUR
- MEDIAN WATER LINE (APPROX.)
- TAX PARCEL LINE
- LIMIT OF REMOVAL AREA (APPROX.)
- -2.0' UNIFORM DEPTH BANK REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)
- -1.5' UNIFORM DEPTH SEDIMENT REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)
- -0.5' UNIFORM DEPTH FLOODPLAIN REMOVAL AREA (WITH REQUIRED DEPTH OF REMOVAL)

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. SEE DRAWING SR-1.1 FOR ADDITIONAL NOTES AND INFORMATION.

50' 0 50' 100'
1"=50'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
1	08/28/09	MODIFIED REMOVAL TABLE	AGS	TAS

Professional Engineer's Name		
STEPHEN GARBACIAK JR.		
Professional Engineer's No.		
6201046373		
State	Date Signed	Project Mgr.
MICHIGAN	08/12/09	SDG
Designed by	Drawn by	Checked by
DA	AGS	DA

STATE OF MICHIGAN STEPHEN GARBACIAK JR. ENGINEER 46373 LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

REMOVAL PLAN (32+25 TO 45+25)

REMOVAL

ARCADIS Project No. B0064539.0000.00670

Date JULY 2009

ARCADIS
30 W. MONROE ST.
SUITE 1710
CHICAGO, IL 60448-2404
TEL. 312.332.4937

SR-1.4

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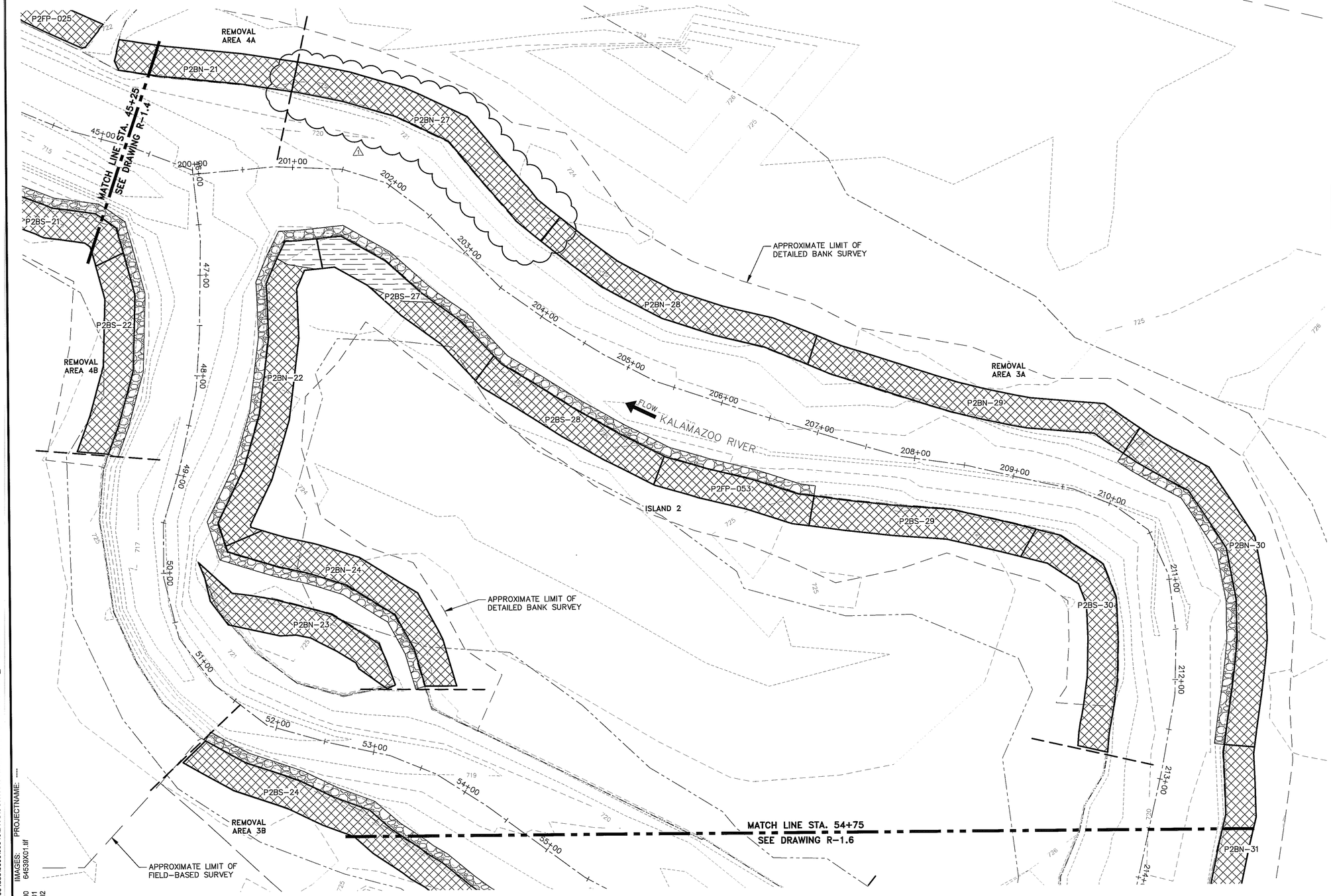
PROJECTNAME: ----



WOODY PLANT SUMMARY TABLE				
REMOVAL AREA	COVER TYPE	ACRES	TREES	SHRUBS
3A	FORESTED WETLAND	1.9	143	428
3B	FORESTED WETLAND	0.5	38	113
4A	FORESTED WETLAND	0.7	53	158
4B	FORESTED WETLAND	0.9	68	203
ISLAND 2	FORESTED WETLAND	2.5	188	563

@ 225 SHRUBS AND 75 TREES/ACRE

RESTORATION TABLE	
RESTORATION CELL	TYPICAL RESTORATION SECTION
P2BN-31	TYPE A
P2BN-30	TYPE B
P2BN-29	TYPE A
~~P2BN-28~~	~~TYPE A~~
P2BN-27	TYPE A
~~P2BN-21~~	~~TYPE C~~
P2FP-025	TYPE C
P2BS-30	TYPE A
P2BS-29	TYPE A
P2FP-053	TYPE B
P2BS-28	TYPE B
P2BS-27	TYPE B
P2BN-24	TYPE B
P2BN-23	TYPE A
P2BN-22	TYPE D
P2BS-24	TYPE B
P2BS-22	TYPE B
P2BS-21	TYPE B

SEE DRAWING R-2.1 AND R-2.2 FOR TYPICAL RESTORATION SECTIONS.

LEGEND:

- APPROX. LIMIT OF REMOVAL AREA
- UPLAND FOREST PLANTING
- FLOODPLAIN FOREST PLANTING
- EMERGENT WETLAND PLANTING
- RIVER RUN ROCK

NOTES:

1. SEE DRAWING G-2.1 FOR BASEMAP INFORMATION.
2. RESTORATION LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. ACTUAL LIMITS SHALL BE DETERMINED VIA FIELD SURVEY BASED ON THE ACTUAL EXCAVATION ELEVATIONS ACHIEVED IN THE FIELD.

1"=50' (50' 0 50' 100')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
1	08/28/09	MODIFIED RESTORATION CELL P2BN-27 AND TABLE	AGS	TAS

Professional Engineer's Name: STEPHEN GARBACIAK JR.
Professional Engineer's No.: 6201046373
State: MICHIGAN | Date Signed: 08/12/09 | Project Mgr.: SDG
Designed by: ANE | Drawn by: AGS | Checked by: DA

STATE OF MICHIGAN STEPHEN GARBACIAK JR. ENGINEER No. 46373 PROFESSIONAL ENGINEER

ARCADIS U.S., INC.

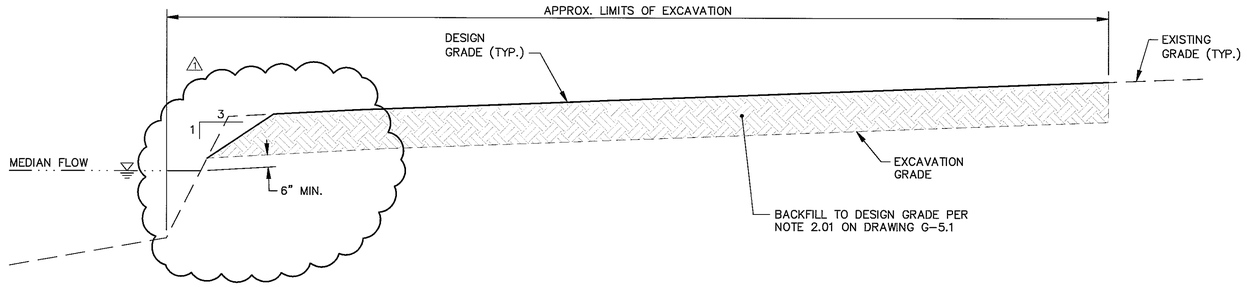
KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

RESTORATION PLAN (45+25 TO 54+75)

BANK AND FLOODPLAIN RESTORATION

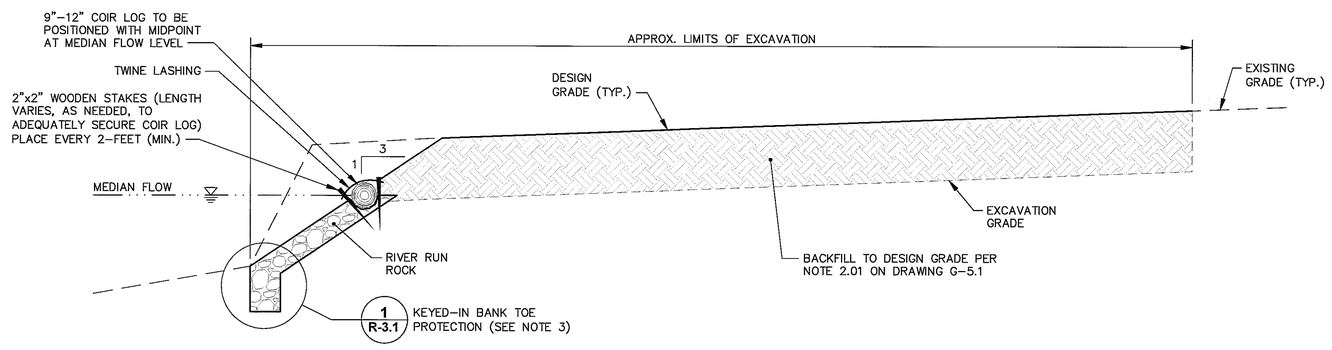
ARCADIS Project No.: B0064539.0000.00670
Date: JULY 2009
ARCADIS 30 W. MONROE ST. SUITE 1710 CHICAGO, IL 60448-2404 TEL. 312.332.4937

R-1.5



TYPICAL RESTORATION SECTION - TYPE A

NOT TO SCALE
(2X VERTICAL EXAGGERATION)



TYPICAL RESTORATION SECTION - TYPE B

NOT TO SCALE
(2X VERTICAL EXAGGERATION)

NOTES:

1. SEE DRAWINGS G-5.1 AND G-5.2 FOR RESTORATION MATERIALS AND PLANTING SPECIFICATIONS.
2. REFER TO RESTORATION DRAWINGS R-1.1 THROUGH R-1.7 FOR RESTORATION REQUIREMENTS.
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XREFS: IMAGES: PROJECTNAME: ---
64539X00

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No.	Date	Revisions	By	Ckd
1	08/28/09	MODIFIED TYPICAL RESTORATION SECTION – TYPE A	AGS	TAS

Professional Engineer's Name		
STEPHEN GARBACIAK JR.		
Professional Engineer's No.		
6201046373		
State	Date Signed	Project Mgr.
MICHIGAN	08/12/09	SDG
Designed by	Drawn by	Checked by
DA	AGS	DA

STATE OF MICHIGAN
STEPHEN GARBACIAK JR.
ENGINEER
6201046373
PROFESSIONAL ENGINEER

ARCADIS

ARCADIS U.S., INC.

KALAMAZOO RIVER STUDY GROUP • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
PLAINWELL NO. 2 DAM AREA TCRA FINAL DESIGN REPORT

TYPICAL RESTORATION SECTIONS

BANK RESTORATION

ARCADIS Project No.
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CHICAGO, IL 60448-2404
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R-2.1